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VICTORIA MELBOURNE

The Journal of the Department of Agriculture of Victoria, Australia.

March, 1926.

PRINCIPAL CONTENTS

The European Corn Borer

Crop Competitions

Plum and Prune Culture

Standard Herd Test—Quarterly Report

European Fruit Scale

The Sheep Blow-Fly

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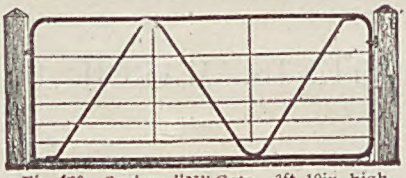

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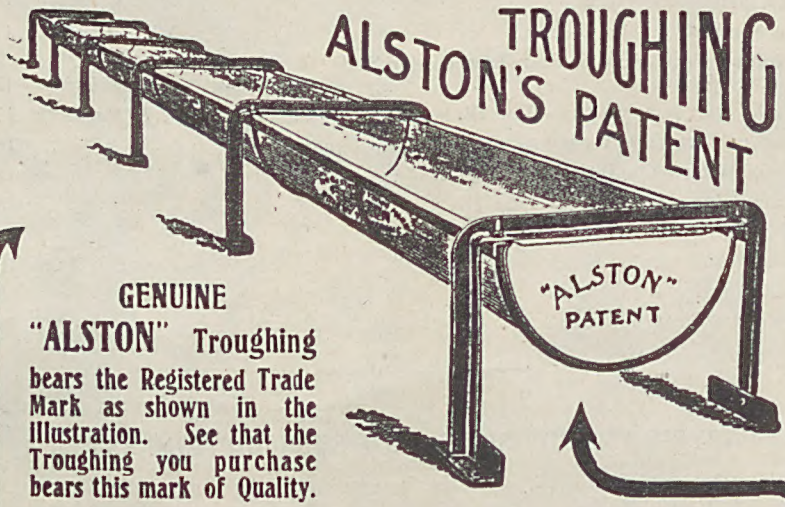

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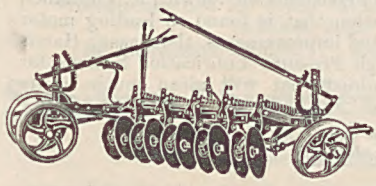

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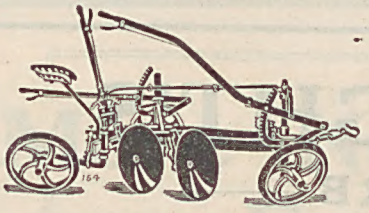

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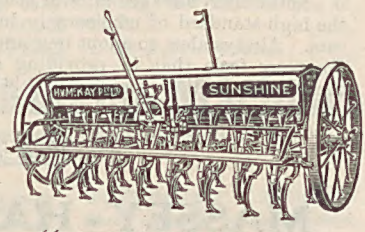

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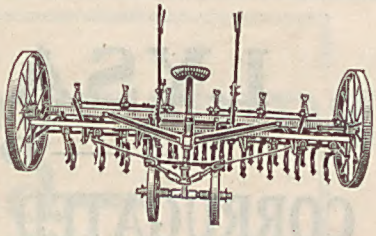

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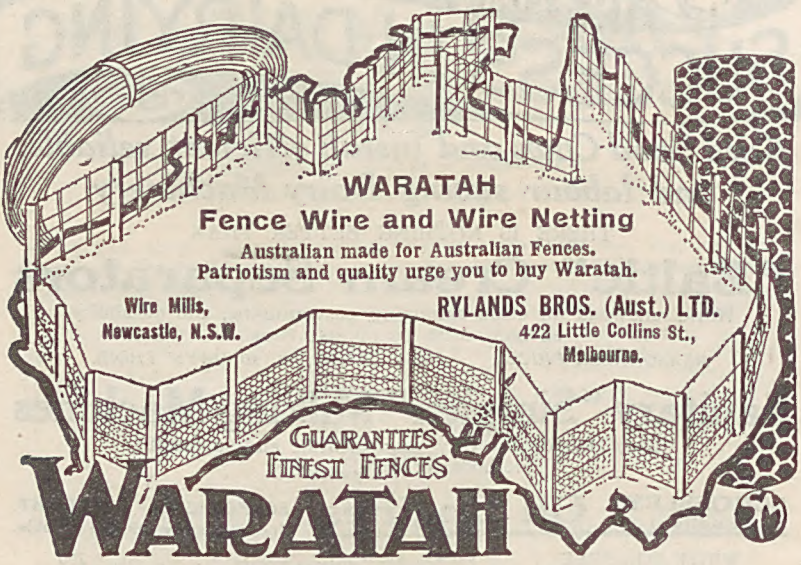

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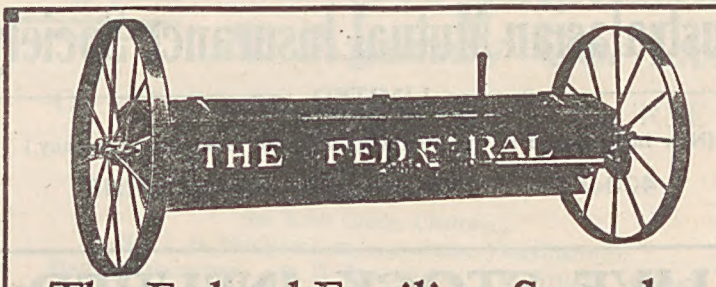

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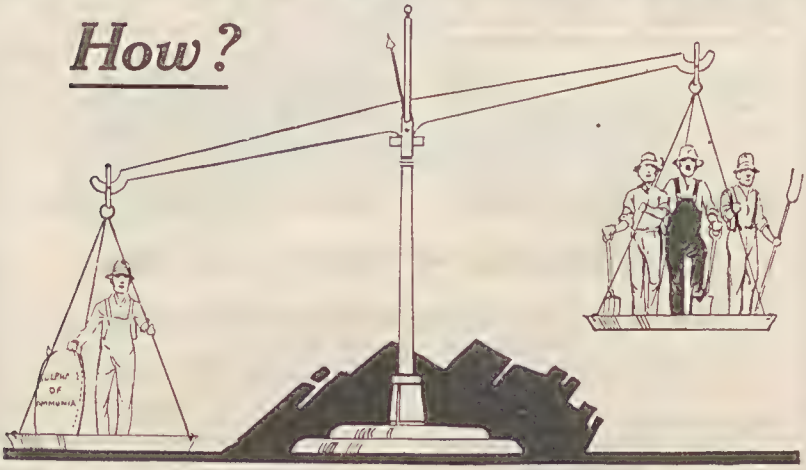

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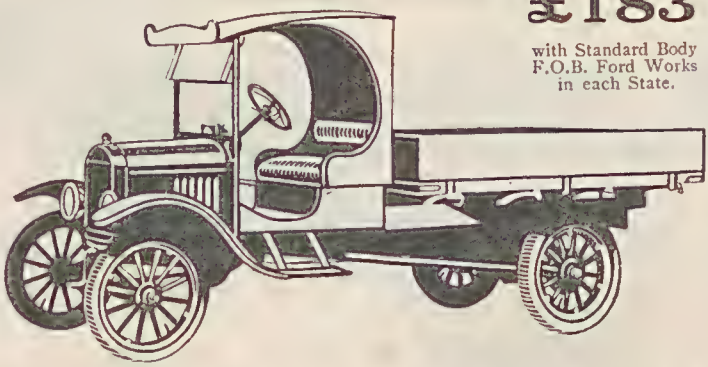

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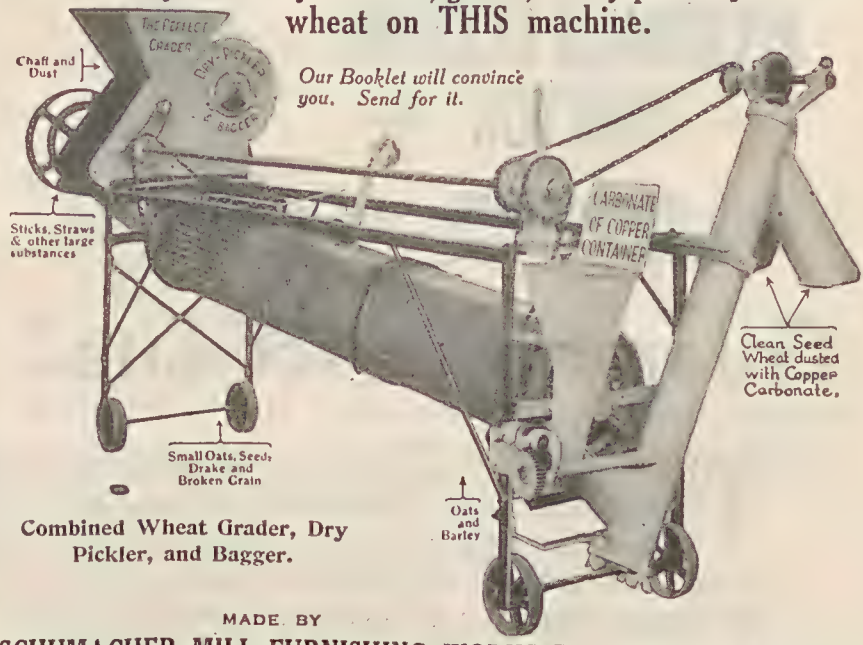
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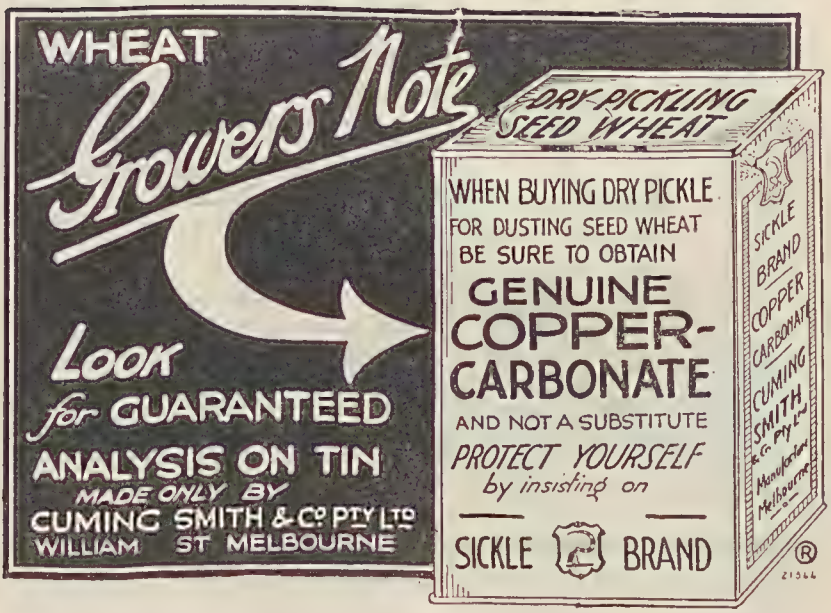

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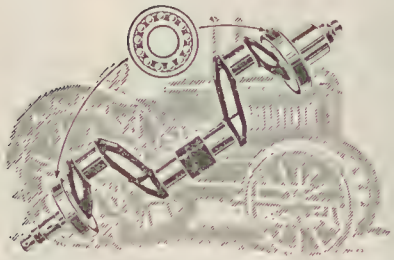

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THE JOURNAL

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Vol. XXIV. March, 1926. Part 3.

NATIONAL MUSEUM MELBOURNE

THE EUROPEAN CORN BORER.

By G. T. Levick, B.Ag.Sc., Science Field Officer.

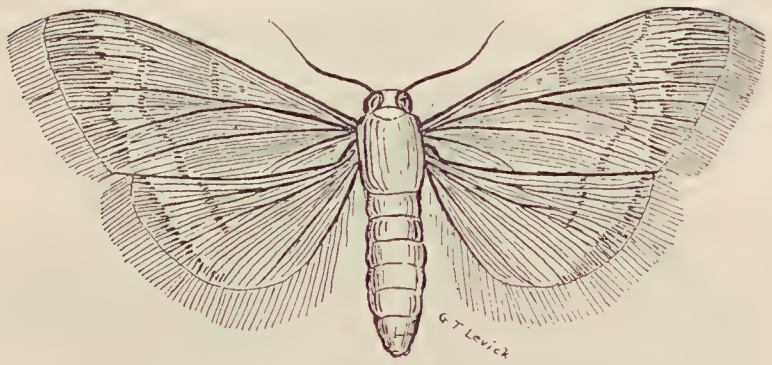
Many of our worst pests are reminders of the folly of allowing animals—no matter of what class—to establish themselves in a new country where, without the checks imposed by natural enemies in their native habitat, they may quickly increase in numbers. The European Corn Borer has not yet, fortunately for us, obtained a hold in any part of Australia, but, unless proper precautions are taken and persisted in, it will surely do so.

There is not the slightest doubt that there is a danger of the European Corn Borer being introduced to Australia. Corn showing the effects of attacks of the borer have frequently been stopped by quarantine officers, and, on at least one occasion, live borer grubs and remains of several moths were found by Mr. French, the Government Entomologist, in such corn.

The serious view taken in American of this borer is indicated by the following quotation from the Quarantine Regulations in New York State, prohibiting the movement to any points outside the quarantine area of "corn fodder, or corn stalks, whether used for packing or otherwise, or any sweet corn or roasting ears, corn on the cob or corn cob, or any herbaceous plant such as cultivated garden, or flowering plants as celery, chard, green or string beans in the pod, beet tops, spinach tops, dahlia, gladioli, and chrysanthemum."

The European Corn Borer (*Pyrausta nubilalis*) has long been known as a pest of maize, broom corn, flax, millet, and other crops in Europe, and, about the year of 1909, was introduced to North America in the ordinary way of trade, either in a shipment of broom corn from Austria, or in a cargo of hemp from Europe, or it may have been introduced in both about the same time. Since then it has established

itself as the most serious pest of maize and allied crops in the United States, and strenuous efforts are being made to limit its spread and to control the pest in districts in which it has become established. From the United States the borer has spread to Canada, in spite of rigorous precautions to keep it out, and in 1920 was discovered in Ontario, when a survey showed nearly 3,000 square miles to be infested, while three years later 12,000 square miles were under quarantine. Though a well-organized system of scouting, quarantine, and control work was established in the affected area, the Ontario Provincial Entomologist in 1924 reported "having found field after field for 30 miles or more with from 70 per cent. to 100 per cent. of the corn-stalks attacked. There is no doubt at all," he adds, "that farmers will have to cease growing corn unless by their joint efforts they check and control the borer." And again, "The writer is convinced that it is by far the worst pest ever introduced into Ontario, and that, if not checked, it will ruin the corn industry."



European Corn Borer (*Pyrausta nubilalis*). Adult.

(Natural size, 1¼ inches across wings.)

[Drawn from specimen kindly supplied by Dr. L. O. Howard, U.S.A.

It is worthy of note that in Canada the European Corn Borer produces only one brood a year. The disastrous result of the introduction of the borer to Australia, where two or even more generations would be probable, is not difficult to visualize.

The European Corn Borer breeds by preference in different varieties of maize and sorghums, though it is known to breed freely in millets, barnyard grass, hemp, and dahlias, while many other plants are attacked, such as potatoes, beet, oats, and various fodder and garden crops. All parts of the plant are attacked except the fibrous roots.

The eggs are laid in clusters on the leaves of the host plant. The young larvae, on hatching first, feed on the leaves; later, in the case of maize, they attack the tassel, and then enter the stem, and their tunnels so weaken it as frequently to cause it to bend or break off.

The larva lives in the interior of the stem until fully grown, when it pupates, and later emerges as the perfect insect or moth.

The full-grown larva is from three-quarters to an inch long. Its head is dark brown, while the rest of the body is of a brownish-white colour, with small brown dots.

The female moth measures about an inch and a quarter across the wings. She is of a pale yellow colour, with darker, almost copper-coloured, wavy markings on the wings. The males are slightly smaller, and darker in colour than the females.

Section through Broom-corn Stalk showing Borer at Work.

The natural means of distribution of these insects is by flight in the moth stage, the moths usually limiting their flights to a mile or two, but occasionally, as in a strong wind, they may travel 20 miles or more.

However, it is in the form of hibernating larvae in the stalks of corn and other plants that the pest is carried from one country to another, and it is against this form of dispersal that precautions have been taken under the Commonwealth Quarantine Act to prevent the entry of the pest into Australia.

WARRACKNABEAL CROP AND FALLOW COMPETITION, 1925.

Report by the Judge, J. Brake, B.Ag.Sc., Chief Field Officer.

The general appearance of the crops and fallows entered for this competition could be taken as a true indication of the very high standard in wheat-growing methods reached in the district surrounding Warracknabeal.

Of the ten crops inspected, it was considered that only two of them would yield less than 21 bushels, which, owing to the low rainfall for the year, was at one time probably thought of as the highest yield that could be expected.

Generally speaking, the purity of the crops was very high, and weeds were not abundant; barley heads, however, were found in most

Mr. D. Kelly's First Prize Open Crop.

of the crops in greater quantity than were seen later further south in the Wimmera, so that there is still room for improvement in this direction.

Loose or blow smut did not appear to be so prevalent as in some of the newer Mallee districts, due no doubt to the more careful selection of seed.

Several of the competitors had a wrong idea of the manner in which loose smut is spread; opportunity was taken, therefore, to explain to them that infection is completed at flowering time by the wind blowing some of the smut from a diseased head on to the female organs of a healthy plant. Thence it grows into the germ of the developing grain.

It will be seen, then, that it is important when purchasing seed to endeavour to obtain grain which was grown in a crop not showing any loose smut. Also, it can be easily understood that, since the infection is inside the grain, ordinary pickling methods are of no avail.

Numbers of cases were met with this year where the prevalence of loose smut in the crop was put down by farmers to the "ineffectiveness" of copper carbonate; this is quite wrong, since the carbonate, like formalin and bluestone, is used for the prevention of ball smut only, and cannot have any effect on spores of any other disease unless they come actually into contact with the powder.

The area from the south of Warracknabeal as far north as Brim, which is covered by the competition, contains a variety of soils requiring different methods of handling. In the working of red ground, it is possible that considerable assistance may be gained by the use of gypsum (copi). Some tests have already been made in this connexion near Nhill with beneficial results, although as yet the experiments are by no means complete.

An application of 1 ton of gypsum to the acre has caused a marked improvement in the texture of the red soil, so that it is neither so stiff, nor does it tend to run together after rain to nearly the same extent.

Mr. R. R. King's dense Crop grown on Fallow judged last year (first prize).

It is not suggested that an application of a ton, costing from 15s. to 20s., be made to whole paddocks of red soil; but where patches of red soil occur dotted through a paddock of black, an application to these patches should be well worth while. As the effect of the gypsum has been observed to persist over a number of years, the average annual charge is reduced to the vicinity of 5s. per acre.

Open Crop—Not less than 100 acres.

Mr. D. Kelly gained first prize in this section with a crop of Federation, which had been sown at the rate of 90 lb. per acre with 100 lb. of superphosphate. It was comparatively free from weeds and disease, and appeared to be fairly true to type. The crop was rather out of the ordinary when we consider the preparation received by the land; the paddock was worked only four times in all. Ploughed in August,

and scarified in November, it was not worked again prior to sowing and harrowing in June.

In an open crop competition, we are always liable to encounter cases which appear to upset the established theories; but too much notice must not be taken of these, as generally the success of the crops can be accounted for by some local climatic or soil conditions.

Mr. F. D. King's crop of Dollar was second with 85 points. It was particularly pure, and free from barley and weeds of all kinds. The seed had been graded, and was sown at the rate of 90 lb., with 112 lb. of superphosphate per acre. The crop, however, although free from take-all, had thin patches scattered through it, which would reduce the yield considerably.

The paddock was ploughed 3 inches deep in July, harrowed twice, cultivated once, and spring-toothed twice; then after harvest it was spring-toothed again, sown with a combine drill on 1st July, and cross-harrowed.

Second Prize Open Crop (Mr. F. D. King's).

Results.—Open Crop, not Less than 100 Acres.

Competitor.	Apparent Yield.	Purity.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.
Possible Points	**35**	**20**	**15**	**15**	**15**	**100**
D. Kelly (B)	34	16	11	14	12	87
F. D. King	27	18	14	13	13	85
D. Kelly (A)	32	16	9	14	13	84
O. B. Schultz	28	18	10	14	13	83
S. J. King	30	16	10	13	13	82

Crop on Last Year's Judged Fallow.—Not Less than 100 Acres.

A very attractive crop was shown by Mr. R. R. King, which promised the top yield amongst the competitors in both sections. It was a particularly dense, even crop, growing on land that was more like the best Wimmera soil than Mallee fringe.

The paddock had been ploughed in March to 3½ inches, spring-toothed in July, harrowed in August, scarified in September, spring-toothed in November, and again in May; then sown with a combine in June, and cross-harrowed.

Federation seed was used, pickled with copper carbonate, and sown at 60 lb. per acre with 95 lb. of superphosphate. Points were lost on account of weeds, principally wild oats and barley.

The second prize went to Messrs. Bunge Bros., exhibiting an exceptionally pure crop of Federation. It was sown on winter fallow at the rate of 75 lb. of seed and 90 lb. of superphosphate; a fairly even crop, but portion of it was considerably dried off.

Mr. S. J. King showed a crop of Federation, sown with the combine on 12th June. Portion of the seed was pickled with formalin, and sown at 75 lb., and the remainder pickled with copper carbonate, sown at 65 lb. per acre. 112 lb. of superphosphate were used throughout.

Crop on Fallow Judged Last Year.—100 Acres.

Competitor.	Apparent Yield.	Purity.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.
Possible points	**35**	**20**	**15**	**15**	**15**	**100**
R. R. King	35	16	12	14	13	90
Bunge Bros.	32	18	11	14	13	88
S. J. King	28	16	9	14	13	80
T. Elsom	22	16	10	14	15	77
F. Hayter	20	16	10	12	13	71

Aggregate of Fallow and Crop on Fallow.—100 Acres.

Name.	Fallow.	Crop.	Grand Total.
Possible points	**100**	**100**	**200**
R. R. King	87	90	177
Bunge Bros.	88	88	176
Elsom, T.	91	77	168
Hayter, F.	88	71	159
King, S. J.	77	80	157

The Fallows.

The fallow competition created additional interest this year because it constituted the first portion of the "King Cup" contest.

This cup has been presented by Messrs. R. R. and S. J. King, for the highest aggregate points in "fallow" and "crop on that fallow" competitions. The conditions state that the winner each year will hold it for the ensuing twelve months, and to be won outright the cup must be won three times, not necessarily in succession. Already keen

rivalry is being manifested, and the donors can rest assured that their generosity will be well rewarded by the fillip given to the movement towards better methods and increased returns.

The twelve fallows presented for inspection were very even in quality, only six points dividing the first and last placed. Owing to the continued dry weather, the preparation of fallow during the past year was attended with some difficulty; but, notwithstanding this, they were generally of a high standard.

Although no rain had fallen immediately prior to judging, some of the fallows were severely handicapped in regard to moisture content by having missed rains which had benefited other parts of the district.

Awards.

Messrs. Bunge Bros. were awarded first place with 91 points, Mr. D. Kelly was second with 90 points, and Mr. F. A. McCrae and Mr. Roy C. Holland were equal third with 89 points each.

The winning fallow was ploughed 4 inches deep in March, logged and scarified in July, harrowed and then logged again and harrowed in August, scarified in September, logged in October, and harrowed in November. It had a nice cloddy mulch on a level seed-bed, and there was practically no trace of weeds. The moisture content, however, was not very high.

Mr. D. Kelly's exhibit was one of those which had received rain above the average for the district, and was consequently well stocked with moisture. It had received five workings—scarified in April, June, and November, and harrowed in July and November. It had a nice mulch, which varied in depth, however, owing to a slight ridginess in the seed-bed.

Fallow—100 Acres. Crop to be Grown on Fallow 1926, and Leading Aggregate Holds King Cup for Twelve Months.

Competitor.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible points	**25**	**25**	**25**	**25**	**100**
Bunge Bros.	23	21	24	23	91
Kelly, D.	22	23	24	21	90
McCrae, F. A.	23	22	21	23	89
Holland, Roy C.	23	23	21	22	89
King, S. J.	22	20	24	22	88
Forss Bros.	22	20	24	21	87
King, F. D.	23	18	24	21	86
Elsum, T.	22	21	22	21	86
McLean, J.	19	23	23	20	85
King, F. D.	23	19	22	21	85
Coutts, G. C.	21	20	22	22	85
King, R. R.	22	21	22	20	85

I wish to thank the secretary and other members of the society who assisted in arrangements connected with the judging.

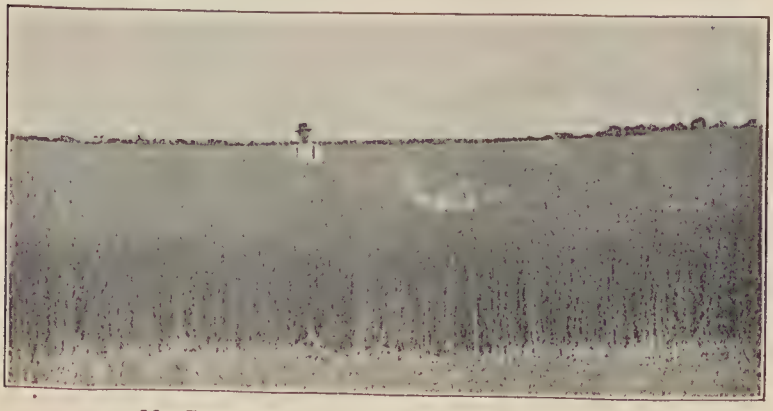
WALPEUP CROP COMPETITION.

Report of the Judge, J. Brake, B.Agr.Sc., Chief Field Officer.

In passing from the newer Mallee to the Walpeup-Murrayville districts, one cannot help being impressed by the still undeveloped possibilities of the Mallee as a wheat-growing area.

Where men are struggling along in new country endeavouring to clear sufficient land to carry on, it is not an easy matter to commence the practice of fallowing and better methods. However, the excellent results being obtained from the Walpeup and similar progressive districts are serving as very good illustrations of what we may confidently expect in the opening up of other Mallee districts.

The yields, types of grain, freedom from weeds and diseases, and general cultivation methods of this district are showing definite improvement, and the institution last year of local experimental plots by the Department of Agriculture will undoubtedly be the means of increasing yields still further.



Mr. Bell in his Crop of Mac's White (first prize).

When the dry season is taken into consideration, the yields obtained this year were rather remarkable. Some of the varieties being tested on the experimental field yielded as high as 24 bushels, and many of the district crops at the time of judging promised yields almost as good.

There is a good deal of room for improvement in regard to purity of seed, as many of the crops had a fair sprinkling of strangers present. However, Mr. R. C. F. Gniel, who conducts the local plots, proposes to carry the seed from the plots out to his bulk fields, and should thus have pure high-yielding seed available for sale in the district in the next year or so.

Most of the crops had heads of barley scattered through them, and loose or blow smut was prevalent, whilst ball smut was seen in one crop.

Generally speaking, the drilling was fair, but most crops had occasional ugly missed strips.

Comments on Crops Inspected.

Mr. T. Bell's crop scored high marks all round, and thus gained first prize; actually, however, it was not the highest-yielding crop. It consisted of 60 acres of Mac's White, and 30 acres of Currawa. The crop was uniformly thick, with no bare patches, and no "tipping." The purity, especially of Mac's White, was high. Very little mustard or wild oats was present, but an odd head of barley was seen.

Mr. A. McKinnon's No. 1 exhibit also showed very little "tipping" or drying off, but odd strangers were found. Mustard was fairly thick at times. Barley was present, but wild oats were not numerous. About the average quantities found in crops this year of loose and flag smuts were present, and occasional misses in the drilling were seen. However, the yield promised well—the highest in the competition—and the crop took second place.

Mr. R. C. F. Gniel and Mr. McGregor shared third place with 83 points each. Mr. Gniel was unfortunate in having a bad patch of wild oats in his Joffre, and mustard rather prevalent in the Federation. The

Mr. A. McKinnon's Crop of Currawa (second prize).

position of the mustard seemed to indicate that its seed had drifted in from an adjoining area.

Loose smut had attacked the Federation more severely than was generally found in most crops, whilst flag smut was also present. This exhibit was the most evenly drilled in the competition.

Mr. McGregor's crop was of average purity, and very clean, except for traces of wild oats in the Currawa and a little mustard in the Federation—a number of heads of barley were also found. Loose and flag smuts were both present; but freedom from disease was above the average.

W. Eagle.—Quarter of crop "tipped," and light in yield; a little mustard present; drilling fairly good; average quantity of loose and flag smuts. This exhibit was marked down severely on account of some ball smut found.

W. H. Gibbons.—Grain shrivelled, and the flats had dried off, indicating a lower yield than those of the leading crops. Purity of the grain was high, and the crop was very clean indeed. There were frequent misses in the drilling, and also the spacing between the rows was uneven

—the spaces were alternately 9 inches and 4½ inches, apparently due to the incorrect position of the sowing hoes on the combine drill.

Mr. A. McKinnon (No. 2).—This crop promised a slightly lower yield than the No. 1 exhibit, and there were more weeds and barley present.

Mr. G. W. Pattinson.—Very uneven crop, in places running out to nothing, which, of course, would materially decrease the yield. A good number of strangers were found. Wild oats and mustard were very prevalent in parts, whilst barley was also present.

The presence of mustard in the crop seems to depend a great deal on the exact time and conditions of sowing. Throughout the Mallee it was most noticeable that, where part of the crop was sown before the weather broke on the 11th May, that portion was free from mustard; whereas in the remainder of the crop, sown later in May after the rain, the weed grew in abundance.

In reading the above comments, it must be borne in mind that all the crops were of a high standard, and points are allotted on a comparative basis. Because an exhibit does not gain first, second, or third place does not mean that it is a failure; rather, the fact that it is entered for a competition at all is fairly conclusive proof that it is above the average for the district.

It must not be overlooked that, in entering for a crop or fallow competition, a farmer is doing a distinct service to his district and the State generally, insomuch that it is only by the free comparisons of results from different methods that real progress can be made.

Awards.

Best 100 Acres of Crop on Fallowed Land Exhibited February, 1925.

Competitor.	Apparent Yield.	Purity of Seed.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.
Possible points	**35**	**20**	**15**	**15**	**15**	**100**
Bell, Thos.	32	17	12	13	13	87
McKinnon, A. (No. 1) ..	35	15	10	11	13	84
Gniel, R. C. F.	32	16	11	10	14	83
McGregor, A. L.	32	15	12	12	12	83
Eagle, W.	33	15	13	8	13	82
Gibbons, W. H.	25	16	14	11	11	77
McKinnon, A. (No. 2) ..	32	15	8	10	12	77
Pattinson, G. W.	27	13	8	12	12	72

Aggregate of 100 Acres Fallow and its Crop, 1925.

Competitor.	Fallow.	Crop.	Grand Total.
Possible points	**100**	**100**	**200**
Gniel, R. C. F.	99	83	182
Bell, Thos.	94	87	181
McKinnon, A. (No. 1) ..	96	84	180
Eagle, W.	97	82	179
McGregor, A. L.	93	83	176
Gibbons, W. H.	96	77	173
McKinnon, A. (No. 2) ..	94	77	171
Pattinson, G. W.	96	72	168
Mingler, J. E.	93	..	..
Black, J. R. C.	89	..	..

BIRCHIP CROP AND FALLOW COMPETITION.

Report of the Judge, J. E. Harrison, B.Ag.Sc., Field Officer.

Chancing Late Spring Rains.

Following upon a dry period of many weeks, an inspection was made in early November of the crops and fallows entered in the above competition. The ill-effects of frosts and hot winds were evident in many of the crops inspected. It was not uncommon to find a field in which a fair proportion of the ears were withered and white in the upper half, or "tipped," as the local description has it. Curiously enough, the grain developing in the lower portion made a good sample. In adjusting itself to climatic and soil conditions, the plant had secured the full development of its grain, but in diminished quantity. Several growers made the observation that if the ears were emerging from the flag when the frosts came, the crops were tipped. No early varieties had suffered, and by no means all midseason and late varieties. The season,

Mr. A. J. Rickard's Winning Crop of Penny.

however, was considered by most to supply further evidence of the suitability of early to midseason varieties for the district. The later the wheat the more necessary are late spring rains to carry it to maturity. As one grower stated, it depends upon late spring being more often wet than dry whether it will pay to grow the later varieties.

It is recognized that September and October are the critical months for early crops, and November as well for late crops. Some interesting information was supplied by the Meteorological Bureau on the rainfall of these months. Records extending over 77 years give the following averages:—September, 192 points; October, 125 points; November, 97 points. From an analysis of records for 30 years, the expectation of rain for November was calculated to be as follows:—

One year in three, below 40 points.
One year in three, between 40 and 100 points.
One year in three, over 100 points.

These figures, though only approximate, as they must be, are interesting. They indicate that, though we cannot forecast the future, we can cal-

culate chances, a feature which will appeal to most of us. Thus, if a grower is depending on November rains, he is confronted with the proposition that his chances are one in three. Accumulated experience as well is against growing of late varieties in the Mallee. The above figures bear out this experience.

The Competing Fallows.

The fallows submitted for inspection in the competition varied considerably in their treatment. Some had been simply ploughed and harrowed, while others had been worked six and seven times. Undoubtedly the nature of the soil has a great deal to do with the amount of cultivation given and required. The heavy soils require more cultivation than the sandy soils. They are more difficult to work. Heavier rains are required in the autumn to soften them for ploughing, and more working is required subsequently to secure a mulch. If the soil

The Home of Mr. Reseigh.

A large area of park lands, from which the native timber has not been cut, surrounds the house.

is not in good working condition, the farmer may wait for rain. This policy is very often, like procrastination itself, the thief of time. Spring arrives, and the fallow is not worked down. Such a policy needs revising, and the practice of working the fallows in a dry winter should be well considered. It is a fact that several fallows of a sandy nature, which had received a minimum of cultivation, had an excellent moisture content for the season. Heavier soils, however, unless frequently cultivated, were very dry by comparison. An adequate mulch is secured readily in sandy soils, which are more or less "self-mulching," breaking down into a fine condition of themselves. Moreover, a shallow mulch is effective in such soils; but, because they are easy to work, a deeper mulch is usually found in them than in the heavier soils. It is hoped that these remarks may encourage growers with the heavier types of soil to work them more frequently.

The work of judging was made easy and rapid by the secretary, Mr. Lester, in whose hands all arrangements were left.

Details of Award.

Sec. 1.—Best 60 Acres of Wheat.

To be grown on fallow entered for previous year's competition.

Name.	Variety.	Yield.	Trueness to Type.	Absence of Disease.	Absence of Weeds.	Evenness.	Total.
Possible Points ..	.. .. ..	**35**	**20**	**15**	**15**	**15**	**100**
Rickard, A. J. ..	Penny	22	19	14	13	15	83
Gillett, R. (Exhibit B)	Hard Federation ..	20	18	14	15	14	81
King, F. J. ..	Penny, Joffre ..	20	19	13	13	15	80
Gilmour, R. ..	Wannon, Nizam, Federation	18	20	11	14	15	78
Gillett, R. (Exhibit A)	Dollar	14	19	14	14	15	76
King, S.	Penny, Federation	16	18	14	13	15	76
Trigg, W. O. ..	Federation ..	16	19	13	13	14	75
Barber, A., & Sons ..	Kinnabulla ..	14	18	14	14	14	74
Trigg, W. O. ..	Federation ..	14	19	12	14	14	73
Crosbie, W. ..	Penny	14	19	13	13	14	73

Sec. 2.—Fallow Competition, 60 Acres.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	**25**	**25**	**25**	**25**	**100**
Lambert, F. J.	18	23	24	20	85
Reseigh, H.	16	23	23	22	84
Reseigh, L. S. (Exhibit A) ..	16	23	24	21	84
King, S. (Exhibit A)	15	23	25	20	83
King, F. J.	16	23	23	20	82
King, S. (Exhibit B)	15	23	24	20	82
Reseigh, L. S. (Exhibit B) ..	14	23	24	21	82
King Bros.	15	23	22	20	80
Rickard, J.	12	23	25	20	80
Crosbie, W.	12	22	25	20	79
Gillett, R. (Exhibit B)	15	23	23	15	76
Barber, A., & Sons	12	22	25	16	75
Gillett, R. (Exhibit A)	14	22	23	16	75
Bolden, F. W.	12	22	23	15	72
Gilmour, R.	12	22	22	15	71

Comments on the Crops.

In the crop competition, first prize went to Mr. A. J. Rickard, with 82 points for a crop of Penny wheat. It presented a most attractive appearance, and stood out as a contradiction to an allegedly dry season. Two harrowings were given the fallow in March. It was also heavily stocked with sheep in the autumn. A working with the spring-tooth cultivator in May preceded sowing with the combine in June, and harrowing immediately afterwards. 75 lb. of seed, and 120 lb. of superphosphate to the acre were sown. The crop was even, well headed, true to type, and heavy for the season.

Mr. R. Gillett's crop of Hard Federation was short, but well headed and full of grain. This variety is somewhat earlier than Federation itself, and it should suit the district. Working of the fallow before

sowing consisted of a harrowing in January and a cultivation in the middle of June. Sowing was carried out about a week later with 80 lb. of seed and 100 lb. of superphosphate to the acre. The land had been lying out for several years. The crop was very clean.

Third place went to Mr. F. J. King, with 80 points for a good crop of Penny and Joffre. Mr. Gilmour's crops had all been seriously affected by the hot weather. At one stage, they must have been very promising, but frosts and winds had stunted and tipped them. An unusual amount of loose or flying smut, called also blow smut in the district, was present, particularly in the Wannon crop. It is recommended that seed should be selected for this year's sowing from a crop known to be free from this disease. This is the best practical method of combating it. Of the three varieties, Nizam seemed the most promising in yield.

Light yields reduced the score for most of the remaining crops, which were otherwise usually up to standard. As a whole, the exhibits were free from weeds and disease.

A good Crop of Penny and Joffre exhibited by Mr. F. J. King.

In the fallow section, highest points were awarded Mr. F. J. Lambert. His exhibit consisted of rising sandy soil, with an odd sandhill in it. Ploughing with a mould-board plough had been carried out in July, and subsequently a harrowing and two cultivations had been given. A fine even mulch had resulted, and on removing this with a spade, a moist seed-bed was exposed. It was one of the few fallows which revealed a moist soil immediately below the mulch. Usually a dry crust occurred which had to be broken through before moist soil was reached. As explained elsewhere, the sandy nature of the soil no doubt contributed to the desirable condition which the mulch exhibited. It was fine, loose, and dry. Though only four workings were given, these had evidently been sufficient for this particular type of soil.

Messrs. H. Reseigh and L. S. Reseigh tied for second place. There was little difference between the exhibits. Both were sandy soils, and the moisture content in both was good. The fallow of Mr. H. Reseigh was evenly worked, and revealed a competent handling of both horses and implements; while the fallow exhibited by Mr. L. S. Reseigh was very clean and free from weeds. The fallow of Mr. H. Reseigh had

been ploughed in March and cultivated in each of the months of May, July, August, and September. Mr. L. S. Reseigh had cultivated in February after a clean burn, and cultivated again in each of the months April, June, August, and October.

Many of the remaining fallows were well worked; while others had been but ploughed and harrowed. The desirability of securing a good mulch during the winter months, even in a dry season, is again stressed.

Wimmera Rye Grass.

The introduction of Wimmera rye glass to the district is said to have taken place several years ago, when a southern farmer travelling northwards fed his horses in camp with hay which he had brought with him. Its presence is regarded as a mixed blessing. Excellent grazing results are obtained with it, both with horses and sheep. On the other hand,

An Ingenious Wire Gate strained taut by means of Lever on top. This gate was photographed at Mr. R. Gilmour's.

its presence in a crop is looked upon unfavorably as a weed. It is undoubtedly out of place in a wheat crop; but Mr. S. King, who has the grass established on various parts of his farm, secures clean crops by thorough cultivation of his fallows. He is convinced there is nothing to fear if frequent workings are given. If oats are sown the next season, the grass is likely to appear plentifully in the oat crop. Where this is required for hay, however, the grass is not detrimental. As a pasture grass it is invaluable for fattening sheep, and for supplying horses with a green bite well towards the end of the year.

Paspalum Grass.

The reclamation of very loose sandhills with the above grass is being attempted by Messrs. Barber and Sons, with promising results. Many plants were growing in almost pure sand, and looked green and succulent.

The plant is deep-rooting, and is good pasture. If a good stand can be secured, there is every hope of binding the sand and preventing drift.

The Home.

With the prosperity that is coming to the district, there is a steady improvement in the home and its surroundings. Almost every home now has its garden. Flowers, vegetables, and fruit trees flourish under good

A Wise Conservation of Mallee Roots commenced thirty years ago by Mr. F. W. Bolden.

cultivation and a little watering. An attractive design in home environment is being worked out by Mr. Resegh, who is preserving a relatively large area of native Mallee flora for conversion into park lands. Apart from the shelter afforded, the natural beauty conferred by these surroundings is very striking.

WANGARATTA CROP AND FALLOW COMPETITION, 1925.

Report by R. G. Thomas, B.Ag.Sc., Manager, Rutherglen State Farm.

Crop Section.

In presenting the report* on the fallow section of the crop and fallow competition conducted by the Wangaratta Agricultural and Pastoral Society, reference was made to the generally excellent manner in which the fallows had been prepared. It is pleasing to find that the thorough preparation of the fallows has been amply repaid in the resulting good crops produced on them. The success of these crops should prove one of the strongest factors in promoting interest in the preparation of land for the wheat crop, and in the society's competition, for it is easily apparent to any one travelling through the district that

* See the *Journal* for July, 1925.

the average yield from crops in the competition is considerably above the district average. This result can be regarded as a triumph for the men who have pioneered the district competition movement, their interest in their work, and the more thorough methods of cultivation adopted by them. Particularly is this fact recognized when the nature of the season during which the crops were produced is considered, for 1925 cannot be regarded as having been an ideal season. Heavy rains over a prolonged period in the summer rendered difficult the correct cultivation of fallows, and rains during the growing period of the crop were light in total, and of so showery a nature that the soil and subsoil were at no time thoroughly saturated. Examination of the records shows that though the rainfall for the year was 22.43 inches, as against an average for the previous 20 years of 25.74 inches, much of this fell during the summer months. Taking the rainfall from April to October, or that rainfall usually regarded as directly useful to the wheat plant, the figures for 1925 show a fall of 11.48 inches, as against an average for the previous 20 years of 17.77 inches. Only three times during this period was the April-October rainfall below that of 1925. It is clear then that good crops in the past season must have been due to thorough methods of fallow preparation, by which the soil was enabled to retain a large proportion of the summer rainfall for the subsequent use of the crops, and which effectively destroyed the rubbish germinated by the spring and summer rains.

The Competition.

First prize was awarded to Mr. A. Kerr, who secured 95 points for crop and 93 for fallow section—a very creditable total of 188 points. Mr. W. Richardson, 84 points for crop and 96 for fallow, total 180 points, secured second prize; and Mr. A. McDonald, 88 points for crop and 91 for fallow, third.

Table of Results.

Competitor.	Yield.*	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total Crop.	Total Fallow.	Grand Total.
Possible Points ..	35	20	15	15	15	100	100	200
A. Kerr	35	18	13	14	15	95	93	188
W. Richardson ..	27	17	12	14	14	84	96	180
A. McDonald ..	29	18	13	14	14	88	91	179
H. Clem (No. 1 entry)	22	17	14	14	13	80	91	171
D. P. Jones ..	24	16	13	14	14	81	88	169
A. E. Sandford ..	20	17	12	13	12	74	92	166
W. H. Charlton ..	20	16	13	13	13	75	90	165
H. Clem (No. 2 entry)	17	19	14	13	13	76	83	159

* Note.—The marks allotted for yield do not necessarily represent the estimated yield in bushels per acre.

Mr. A. Kerr's crop of Marshall's No. 3 was particularly heavy, being well grown, well headed, and even throughout. Odd strangers were apparent, also a sprinkling of wild oats and undergrowth and a trace of loose smut.

Subsequent to the fallow preparation detailed in the report on the fallow section of the competition, the land was cultivated with a "Coleman" type scarifier in mid-May, and drilled and harrowed immediately. Eighty pounds of seed and 112 lb. of manure per acre were sown.

Mr. W. Richardson presented a nice crop of Minister and Hard Federation, though not so heavy as those of Messrs Kerr and McDonald. This crop was a nice height, well headed and even; some strangers were present, also a fair sprinkling of oats and "Yellow Jack" and a trace of flag smut. After the cultivation previously reported, the land was sown with the rigid-tyned combine the third week in May, and subsequently eaten off with sheep at the end of July. Sixty pounds of dry pickled seed per acre were sown, with 112 lb. of super.

Mr. A. McDonald's crop of Rajah was most attractive. This is a new variety produced by the Department of Agriculture, and is a very early-maturing type. Its success in the past season is noteworthy, and it should show to advantage in any relatively dry season or district. With the average rainfall enjoyed by the Wangaratta district, however, it can hardly be generally recommended, except in cases where late sowing it unavoidable. With the normal spring and early summer rains of the district it would probably suffer through lodging. Even this year, Mr. McDonald's crop, which had been ripe some little time, was beginning to show some weakness in the straw. The crop showed a few strangers, some wild oats, and a trace of loose smut. Following the cultivation prior to the fallow judging, the land was spring-tooth cultivated the third week in April, drilled during the middle of May, and part harrowed in the middle of June. Eighty-five pounds of seed and 112 lb. of manure per acre were sown.

Mr. H. Clem's entry was of Minister; a very clean crop, generally fairly heavy, but with lighter crop on the sandy ground. A fair proportion of strangers was present, with a trace of both loose and flag smut. Cultivation subsequent to fallow judging was as follows:—Scarified with Coleman implement and spring-toothed across in April, harrowed and spring-tooth cultivated in May, drilled and harrowed latter end of May. Crop was fed off late in September, then harrowed and cross-harrowed. Seed, 75 lb. per acre; super., 90 lb. per acre.

Mr. D. P. Jones showed a fairly heavy, even crop of Joffre. A number of strangers were present, some "Yellow Jack" and undergrowth, and a little loose smut. Preparatory to sowing, the land was scarified, harrowed, and rolled in the latter end of May, and drilling was completed by the 1st of June. Seventy-five pounds of seed and 80 lb. of manure per acre were sown.

Reviewing the remarks on the fallow and crop sections of the report, the following can be regarded as a summary of the methods adopted by the competitors:—

Land fallowed between July and early September, ploughing being to a depth of 5 to 6 inches with the mouldboard plough; land cultivated to a depth of 2 to 3 inches after rains (in one or two cases greater depth of cultivation was noted, with corresponding faults in the fallow); crops practically all sown from the middle to the end of May, the rate of seeding varying from 65 to 85 lb. per acre, and of manure from 80 to 112 lb. per acre.

MILDURA DISTRICT FALLOW AND CROP COMPETITION, 1925.

Report of Judge P. D. McRae, Field Officer.

The Competing Crops.

Section I.—50-60 Acres of Wheat.

Among the various factors which have contributed to the increase in the average yield of wheat per acre during recent years, a very high value must be assigned to Crop Competitions. The methods by which the best yields are obtained being published enables all who so desire to copy them, and thus the standard of farming practice is gradually raised. The *Sunraysia Daily* is, therefore, to be heartily congratulated on the enterprise and public spirit shown in initiating these competitions in the Mildura district.

The present competition is limited to the new settlement along the railway line from Red Cliffs to Werrimull. Here a fine type of settler is fighting with splendid courage and pertinacity against the usual difficulties associated with Mallee settlement, aggravated this year by the unfavorable season. They all appear to approach their task with a determination to apply only the best methods, and although most of the blocks have been occupied for one or two years only, a considerable area is already fallowed. The quality of the land is high-class Mallee, growing big timber, and therefore the success both of the settlers individually and of the Fallow and Crop Competitions apparently is assured.

Section I.—Wheat—50-60 Acres.

The first place in the competition this year was awarded to Mr. E. H. Walker, who showed a very fine well headed crop, fairly dense and even, and pure except for a sprinkling of barley; it also contained some barley grass; a very little loose smut was to be seen.

This crop was grown on fallow which had been ploughed in August to a depth of 3 inches, and then harrowed. Portion was lightly scarified in March, and drilling was finished by the third week in May. Four varieties of wheat were sown, viz.:—Mac's White, Rajah, Currawa, and Penny, at rates varying from 38 to 45 lb. per acre, with 38 to 40 lb. of superphosphate.

Mr. D. Rogers came second with an excellent crop consisting of two varieties, Mac's White and Marshall's No. 3. It was heavy and pure, and particularly free from disease. The Marshall's No. 3 was somewhat thin in patches, with a few heads of barley and oats showing.

The land was ploughed to a depth of 2 inches in September, harrowed in October, and sown the third week in May, a seed drill being used for the Marshall's No. 3; 40 lb. each of seed and manure was used. The Mac's White was put in with a combine with harrows attached, the quantities of seed and superphosphate being 50 lb. of each.

Mr. A. W. Higgins' No. 1 entry was a crop of Mac's White sown on fallow. A few acres at one end were rather light, but the remainder was remarkably good, and free from all foreign growth excepting barley.

of which there was a good deal. The crop was also somewhat badly affected with loose smut. It was ploughed the third week in September, harrowed in February, and sown with a combine the third week in May, 60 lb. of seed and 90 lb. of superphosphate being used.

Mr. J. D. Gairns' No. 1 entry consisted of equal areas of Gluyas and Major, grown on stubble. It had been cultivated both ways in February, and sown from 16th to 20th May with from 44 to 48 lb. of seed, and from 70 to 72 lb. of superphosphate. This portion of the crop was fairly even and clean, although on the average rather light.

No. 2 entry contained 25 acres each of Mac's White and Currawa. The land was ploughed early in March and then cultivated, and sown during the first week in June with 48 to 50 lb. of seed and 72 to 80 lb. of superphosphate. This was a remarkably heavy crop, tall, dense, and green, but contained a large proportion of other varieties, as well as a great deal of barley; it was fairly even, and showed a little loose smut.

These two crops are interesting as showing what can sometimes be done by promptitude in seizing an opportunity. During the month of February a heavy storm, causing a precipitation of 8 inches of rain, passed through the district over a narrow strip of land, which included portion of Mr. Gairns' property. He immediately got to work with the plough and cultivator to conserve as much as possible of this moisture, and with what success is shown by his crop, much of which was 30 inches high. At the time of inspection it was so heavy, and its water requirements so large, that it was doubtful whether it could reach maturity without considerable pinching of the grain.

Of the remainder of the crops only one was on fallowed land, and it was a comparative failure, having been sown without manure. The others were on land where the exigencies of clearing and other pioneering work had precluded fallowing. Considering the scanty preparation of the soil, these crops developed surprisingly, and with a normal rainfall would have produced payable yields; but under the dry conditions obtaining this season the available moisture was not quite adequate to bring them to a satisfactory maturity.

The outstanding lesson of the competition is that the benefits obtained by fallowing are definite and consistent. In spite of the fact that during the growing season of the crops the rainfall amounted to 3½ inches only, all those sown on fallowed land, with the exception noted above, made good growth, and should produce highly remunerative returns.

The crops were on the whole remarkably free from all diseases with the exception of loose smut, which was prevalent, and in many cases had taken a heavy toll. This is the form of smut in which, the ear of wheat being attacked, the place of the grain is taken by a mass of black spores, which finally blow away, leaving the stalk bare. It is very necessary that the ravages of this disease should be stopped, and there are two fairly effective means by which it can be done; one is the treatment of the Jensen hot water method, and the other the seed by the use of seed from smut-free drops only.

DETAILS OF AWARD.—50-60 ACRES OF WHEAT.

Competitor.	Yield.	Purity of Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.
Possible points	**35**	**20**	**15**	**15**	**15**	**100**
E. H. Walker	34	19	14	14	13	94
D. Rogers	32	19	13	15	13	92
A. W. Higgins, No. 1 ..	28	18	13	12	13	84
J. D. Gairns, No. 1 ..	23	18	14	14	14	83
F. H. Baker	23	18	14	12	14	81
J. D. Gairns, No. 2 ..	31	10	14	13	13	81
A. H. Scown	18	19	14	14	12	77
M. C. Thompson	19	18	13	14	13	77
J. B. Campbell	20	18	13	13	13	77
W. E. Kelly	20	18	13	12	13	76
J. Horne	15	19	13	15	13	75
A. W. Higgins, No. 2 ..	19	18	14	12	12	75
T. W. Bowles	20	17	12	12	11	72
Ivens Bros.	13	18	13	14	14	72
J. H. Walsh	20	16	10	13	13	72
J. Bancroft	13	18	12	14	14	71
C. Tannant	8	17	12	14	12	63
H. R. Curtis	10	15	12	14	12	63
J. Smith	10	12	14	14	12	62
G. Dickeson	8	15	13	14	12	62

SECTION II.—50 ACRES OF FALLOW.

There were seven entries in this section, and it is pleasing to report that, though there was a certain crudeness apparent in some of the fallows, due to the fact that the land was under cultivation for the first time, yet the tillage methods this year were much in advance of those practised previously. While, for instance, last season the land in some cases received only two workings, it had this year, when judging was being carried out, already received three and four, and the farmers were in readiness to get the implements moving again as soon as rain came. This thoroughness of cultivation, provided, of course, that the soil is not reduced to too fine a tilth, will undoubtedly be favorably reflected in next season's yields.

The highest points were awarded to Mr. A. H. Symes. Although on the heavier portion of his land the moisture content was not high, it was much more in evidence on the sandy rises. The mulch was of fairly regular depth, the subsoil compact, and the land fairly free from weeds. The cultivation was as follows:—Ploughed in the beginning of June to a depth of 3 inches and harrowed, springtoothed towards the end of June and again in the middle of July.

Mr. W. A. Treweek was second with a fallow in very good condition and well charged with moisture. Barley grass was growing strongly on a small portion of the paddock. It had been ploughed in July to a depth of 4 inches, and springtoothed to the same depth in September.

Mr. E. H. Walker showed a nice, medium rough mulch, rather deep, with a fair amount of moisture and a good deal of barley grass. This

land was of somewhat heavier type than most of that inspected. It had been ploughed to a depth of 3 inches in June and July and then harrowed; in September portion of the area was scarified, and the whole again harrowed.

Though the remainder of the fallows were in fair condition, yet each showed some deficiencies. On the whole, the most serious fault noticed was that the barley grass, which was present in most instances, had not been more rigorously suppressed. In the event of takeall making its appearance, this grass will play an important and mischievous part in carrying on the disease from year to year.

Details of Award.—50 Acres of Fallow.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible points ..	**25**	**25**	**25**	**25**	**100**
A. H. Symes	18	22	23	22	85
W. A. Treweek	23	22	17	21	83
E. H. Walker	20	21	18	19	78
J. Ledgerwood	20	19	20	18	77
W. B. O'Shanessy ..	15	20	23	19	77
A. W. Higgins	18	21	17	20	76
D. W. Connell	18	18	23	15	74

In presenting this report I wish to acknowledge the assistance and courtesy which I received from the staff of the *Sunraysia Daily*, and the hospitality extended to me while travelling through the district.

A BOOK ON CATTLE BREEDING.

Under the title of "Cattle Breeding," Messrs. Oliver and Boyd, of Edinburgh, have published the proceedings of the Scottish Cattle Breeding Conference held in Edinburgh during 1924. The series of papers read at the conference has been so arranged as to take the reader from "The Origin of Cattle" through the "History of Breeding" to a consideration of many of the difficulties encountered by the breeder, terminating in a more complex genetic analysis.

Some of the chapters are essentially for the scientific worker, though had they been made a little more explanatory they would appeal to those who have been unable to keep pace with scientific progress. Most of the articles, however, are written in clear language, and the subjects are dealt with in a fascinating manner. The book is more comprehensive than the title suggests, for besides being of value to all seeking enlightenment on many of the problems besetting the breeder of stock, it would be a valuable addition to the library of any student of heredity.

The published price of the book is 12s. 6d. net; this means that the price in Australia would be about 16s.

FUNCTIONAL DISEASES OF APPLES IN COLD STORAGE.

In the introduction to a very interesting report,* prepared by Drs. Franklin Kidd and Cyril West, of Cambridge, under the above heading, attention is drawn to the extension of the industrial practice of apple storage on land and sea, and to the physiological or functional diseases (as distinct from fungal rots) which have come to be recognized as characteristic of cold storage. The difficulty that exists among those engaged in various countries in research work in defining and diagnosing these diseases is pointed out, and the object of the report, it is stated, is to draw together, as far as possible, the threads of our knowledge in regard to them.

Concisely, the report contains the authors' classification of these diseases, a list of reports by various workers in different countries, and a number of plates depicting the external or internal appearance of affected fruit.

In the classification of the diseases, four sections are made:—

1. Apple scald.
2. Internal breakdown.
3. Brown heart.
4. Frost injury.

Section 1.—Apple Scald.

This disease is described as "browning of the skin of the fruit, unaccompanied by softening or browning of the flesh tissues; controlled to some extent by efficient ventilation, and largely by the use of wrappers impregnated with odourless, mineral oil, or by oiled straw or shredded oiled paper distributed amongst the fruit. Under this heading may be included certain spotting diseases of apples which do not appear to be due to fungi."

Attention is drawn to the general agreement amongst workers that fruit which is picked green is more susceptible to this disease than that which is more mature. Apples from trees heavily irrigated and from young trees have also been shown by some investigators to be especially susceptible to apple scald. The marked difference in susceptibility shown by different varieties is regarded as important.

As regards storage temperature, an agreement is found amongst investigators in favour of a well-controlled storage temperature of 32 deg. to 34 deg. F. for restricting the amount of scald appearing in any given time during the storage season.

The theory of Brooks and his co-workers in America, that apple scald is due to the accumulation of esters or similar products in the tissues of the fruit and in the surrounding air is accepted.

* Special Report No. 23, Issued by the Department of Scientific and Industrial Research, London. As the report is of great value to all interested in the fruit industry, and as many will be unable to obtain a copy, this abridgement has been made for publication by Mr. J. E. Harrison, B.Ag.Sc., of the Department of Agriculture.

Section 2.—Internal Breakdown.

Described as "premature browning of the flesh of the apple with or without mealiness. Tissues not necessarily dead. Controlled by storage at somewhat higher temperatures than 32-34 deg. F. Under this category may be included "internal browning," "soft scald," "flesh collapse," "Jonathan scald," "Jonathan breakdown," and "physiological decay."

The characteristics of the disease are given as follow:—In the earliest stage the flesh assumes a slightly abnormal appearance without any change of colour. Later there is a marked browning of the whole or part of the flesh, in which the brown tissue may or may not extend to the skin. The affected tissue may be firm at first, but becomes soft as the disease progresses. In the final stage of the disease, apples may be completely brown, and exhibit a baked appearance.

For the control of the disease, it is recommended that harvesting should be done at the right stage of maturity, when the ground colour, which is green when the fruit is immature, begins to whiten or yellow slightly as it approaches full maturity. Apples picked either side of this stage are regarded as more liable to internal breakdown.

The effect of climatic conditions on the incidence of internal browning, as recorded by various workers, is considered. Apples from dry districts and apples from heavily cropped trees have been found usually to be of superior keeping quality.

In respect to temperature during storage, there is a general agreement in investigations that internal breakdown occurs earlier and to a more serious extent at 32-34 deg. F. than at somewhat higher temperatures.

Section 3.—Brown Heart.

Described as "death and browning of the flesh of the apple, caused by concentrations of carbon-dioxide in the storage atmosphere above a certain limit, oxygen being present. Under otherwise similar conditions, apples are more susceptible to brown heart in cold store than in ordinary store. Method of control—the avoidance of concentrations of carbon dioxide above 8 to 10 per cent. in the storage atmosphere."

The appearance of an affected apple is given as sound externally, but when cut open, as brown in part or wholly internally. The dead brown tissue is usually sharply defined from the living tissue, and may have cavities formed in it, due to loss of water. When the casual conditions are removed, the disease does not spread.

Only under exceptional circumstances, where the storage chambers have gas-proof walls, and when no ventilation is given, is the disease considered likely to occur. In ships' holds cooled by the grid system, the disease may develop if ventilation is limited to accidental leakage.

Section 4.—Frost Injury.

The following various symptoms are given:—

(*a*) Slight injury: Mealiness after thawing and loss of keeping quality, no browning; (*b*) Moderate injury: Diffuse browning of

the flesh, sometimes localized, sometimes general, and mealiness after thawing, with or without surface disfigurement, the symptoms closely resembling those of internal breakdown (and soft scald); (*c*) Severe injury: The whole or major part of the fruit dead, and often waterlogged and translucent after thawing, browning spreading only slowly through the waterlogged parts."

Internal browning and frost injury are said to be often confused. Frost injury is believed to be mainly due to ice formation in the tissues of the apple.

Apples may be cooled below their freezing points without the formation of ice, but if they are bumped or jarred in any way, ice will usually form. Hence it is unlikely that apples may be cooled below their freezing points without ice formation during transit overseas.

Apples are damaged severely if bruised while frozen.

Browning through frost injury is not often detectable without cutting the fruit. One type of injury often found is a browning of the vascular bundles (veins) only, which stand out as brown dots and threads when a cut surface is examined.

General.

In addition to the above sections, tables are given supporting the various conclusions. The work of Mr. D. B. Adam, of the Victorian Department of Agriculture, is frequently mentioned, and much valuable American literature is cited. The report is obtainable from the Department of Scientific and Industrial Research, 16 Old Queen-street, Westminster, London, S.W.1, for the sum of 1s., and should be secured by all interested or employed in the cold storage of apples.

The classification of the diseases may be regarded as a particularly helpful contribution to the subject of apple storage. Hitherto, much confusion has existed owing to the employment of various names for the same disease, and a general need has been felt for the simplifying influence of a classification. Though the present classification may be modified as time goes on, it fulfils a much-felt need at the present moment. There are some features which we shall have difficulty in adopting, such as the inclusion of "spotting" under the heading of "apple scald." In this connexion it is mentioned here for the guidance of growers that Plagge and Maney, working in America, have found no control of "Jonathan spot" by the use of oiled wrappers. The inclusion of "soft scald" or "Jonathan scald" under the term of "internal breakdown" is also one which is unlikely to be generally adopted. The occurrence of this disease is more strictly limited to lower temperatures than that commonly known here as internal breakdown, and is, moreover, a disease of early storage, while the latter appears usually in late storage. For the most part, however, the classification will be accepted, and the book is strongly recommended. It contains not only much information which will be useful to those who have the control and management of cool stores, but should prove as well a valuable guide to the apple-grower in the harvesting and handling of his fruit before storing.

STANDARD HERD TEST.

Report for Quarter ended 31st December, 1925.

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 196, of which 137 qualify for the certificate.

The amount of butter fat required for qualification varies according to the age of the animal (up to 5 years at time of calving), the standards being as follow:—

Junior 2 year old (under 2½ years at time of calving)	200 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving)	225 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving)	250 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving)	275 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving)	300 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving)	325 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb	
Mrs. F. M. Akehurst, Tunstall	1	..	Jersey ..	Canary 11th of Kingsvale ..	Mature	7181	26.1.25	273	19	5,708	5·10	291·04	350	
H. Allez, Moama, N.S.W.	3	2	Friesian	St. Alban's Pearl	Sr. 4 yrs.	542	12.1.25	273	32½	11,457	3·30	378·21	325	348
				Rockbank Tulip 3rd ..	Sr. 2 yrs.	..	21.3.25	273	20	5,985	3·41	204·14	225	
				Springfield No. 7	Mature	1015	26.3.25	273	29	9,594	3·96	380·00	350	
Estate of Mrs. Alston, Cobram	1	1	Jersey	Romany Girl 3rd of Tarnpirr	Mature	12158	8.1.25	273	..	5,802	6·61	383·47	350	299·48, 353·79
J. Anderson, junr., Lyndhurst	1	1	Jersey	Canary 12th of Kingsvale ..	Mature	10130	27.2.25	273	34½	9,997	5·07	506·62	350	404.17, 469.34, 527·19

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
W. H. Atherton, Murrayvale	2	2	Jersey ..	Rarity of Meadow Vale ..	Sr. 4 yrs.	10134	21.1.25	273	9½	5,854	6·04	353·85	325	330·52, 397·28
				Quality of Meadow Vale ..	Mature	10133	9.3.25	273	14½	6,130	6·11	374·77	350	293·12, 346·24
W. K. Atkinson, Swan Hill	1	..	Milking Shorthorn	Bloom of Willow Park ..	Mature	11042	31.1.25	273	14	8,007	3·9	312·18	350	292, 287
F. Austin, Lara	2	1	Jersey	Graceful Countess 2nd of Lysterfield	Mature	10268	10.1.25	273	22	6,778	6·13	415·64	350	210, 369, 408, 485
				Mercedes Belle 2nd of Avalon	Jr. 2 yrs.	16212	17.1.25	202	4	1,910	4·87	92·93	200	
W. H. Axford, Camperdown	1	1	Jersey ..	Greta of Glenallwyn ..	Jr. 2 yrs.	16604	10.2.25	273	18	4,838	5·82	281·69	200	
J. Baker, Gheringhap	2	1	Red Poll	Karong Lily 2nd	Sr. 2 yrs.	918D	17.1.25	273	9½	4,818	5·04	242·96	225	
				Karong Belle 4th	Jr. 3 yrs.	917D	24.3.25	273	4	4,491	4·44	199·24	250	
Mrs. I. Beard, Outtrim	2	2	Jersey	Belle of Linga Longa ..	Jr. 2 yrs.	Vol. XIII.	22.1.25	273	13½	4,269	5·34	228·16	200	
				Daisy of Linga Longa ..	Sr. 3 yrs.	12868	10.2.25	273	19½	5,724	5·72	327·67	275	232, 258
F. Bidgood, Staghorn Flat	1	1	Jersey ..	Daisy of Staghorn	Sr. 2 yrs.	Vol. XIII.	7.3.25	273	25	7,161	5.50	394·16	225	
A. A. Broad, Sutton Grange	1	1	Jersey ..	Bunty 2nd of Coliban ..	Jr. 2 yrs.	15485	18.2.25	273	22½	7,005	5·21	364·67	200	
J. H. Cathie, Chiltern	1	..	Jersey ..	Kyora Noble Charm 3rd ..	Mature	9701	23.3.25	..	9½	5,490	4·74	260·41	350	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
Capt. P. Chirnside, Oakleigh	3	3	Jersey ..	Werribee Attraction Fancy Madeira	Jr. 3 yrs.	13337	9.1.25	273	17	6,348	6·05	384·09	250	329
				Werribee Island Fancy Starbright	Sr. 2 yrs.	16231	16.1.25	..	23	7,022	6·57	461·40	225	
				Werribee Master Starbright ..	Jr. 2 yrs.	16234	26·2·25	..	25½	7,110	5·70	405·18	200	
W. J. Cockbill, Rockbank	3	2	Ayrshire	Fulham Beauty	Jr. 2 yrs.	10902	25.1.25	273	13½	5,340	4·21	225·00	200	
				Fulham Sylvia	Sr. 2 yrs.	10916	7.2.25	180	4	3,646	3·88	141·63	225	
				Fulham Maybelle II. ..	Jr. 2 yrs.	10911	23.2.25	273	14	5,968	4·78	285·23	200	
Colac High School, Colac	1	..	Friesian	Victoria Milk Belle ..	Jr. 4 yrs.	997	2.3.25	241	4	5,295	3·53	187·10	300	231
N. C. De La Rue, Weering	3	2	Jersey ..	Fairy Queen of Colac ..	Mature	9302	6.3.25	273	19	7,216	5·05	364·72	350	
				Lily of Colac	Mature	9307	10.3.25	273	17½	7,138	4·65	331·91	350	
				Carnation of Colac	Jr. 2 yrs.	Vol. XIII.	22.3.25	..	16	5,133	5·21	267·46	200	
E. A. Dennis, Swan Pool	3	..	Jersey ..	Jersey May 4th of Ilford ..	Jr. 2 yrs.	..	25.1.25	273	10	3,285	5·06	166·20	200	
				Flower 13th of Melrose ..	Mature	13343	28.1.25	273	4	4,588	6·49	297·94	350	319, 340
				Jessie 23rd of Melrose ..	Mature	9887	14.3.25	273	6	3,946	6·00	236·07	350	135, 206, 201
Department of Agriculture	1	1	Friesian	Dominion Kathleen ..	Mature	378	24.2.25	273	..	10,572	3·59	379·64	350	451, 301
	10	8	Red Poll	Broom	Sr. 4 yrs	240A	19.1.25	273	4	7,683	4·02	309·00	325	165, 220
				Victoria Distant View ..	Jr. 2 yrs.	1152A	25.1.25	273	24½	7,027	4·59	322·46	200	
				Victoria Silver Slipper ..	Jr. 2 yrs.	965AA	26.1.25	273	14½	6,675	4·23	282·35	200	
				Victoria Euphrates ..	Sr. 2 yrs.	716A	27.1.25	..	19½	5,974	4·13	246·74	225	
				Victoria Calumet ..	Sr. 2 yrs.	790B	1.2.25	273	31	6,570	4.73	310.91	225	
				Victoria Virgilia	Sr. 3 yrs.	863C	8.2.25	..	16½	5,811	4·86	282·51	275	170
				Victoria Florin	Sr. 2 yrs.	717A	19.2.25	273	20	6,184	4·13	255·50	225	
				Victoria La Regal	Sr. 2 yrs.	718A	27.2.25	273	30	8,805	3·63	319·87	225	
				Victoria Rose Major ..	Jr. 4 yrs.	5AA	3.3.25	273	25	8,274	3.98	329·56	300	216, 325
				Briar	Mature	379C	7.3.25	273	14½	7,565	4·42	334·40	350	254, 297, 364, 364, 391, 330, 405

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
C. Deverell, Wangaratta	7	6	Jersey ..	Una of Wooringa	Sr. 3 yrs.	12175	23.2.25	273	10½	5,460	6·66	363·90	275	363, 351
				Arcadia's Princess	Sr. 3 yrs.	12173	27.2.25	273	16	5,952	5·92	352·40	275	382
				Gold Bell of Methven ..	Mature	9293	5.3.25	273	17½	7,620	5·02	382·52	350	413, 516, 517, 411
				Gold Bird of Methven ..	Sr. 4 yrs.	13713	6.3.25	273	15½	5,659	5·29	299·36	325	329, 366, 185
				Wonga Belle of Waratta ..	Jr. 4 yrs.	12203	7.3.25	273	13	6,384	5.59	356·94	300	
				Gold Coin of Methven ..	Jr. 2 yrs.	Vol. XIII.	20.3.25	273	21½	6,384	5·09	325·09	200	
				Dianthus	Sr. 3 yrs.	12174	21.3.25	273	18	5,214	5·69	296·78	275	258, 235
Dickinson Bros., Sebastopol	1	1	Friesian	Jean 2nd of Ashby ..	Jr. 4 yrs.	1003	17.3.25	273	33	11,454	3·58	410·31	300	257
G. Dwyer, Balwyn	1	1	Jersey ..	Jessie 40th of Melrose ..	Jr. 2 yrs.	16637	15.2.25	..	16½	4,729	6·35	300·48	200	
S. Earle, Merrick	3	3	Jersey ..	Flower of Bignold	Jr. 4 yrs.	11240	30.12.24	273	20	7,269	4·63	336·63	300	206, 301
				Cymbal of Benguella ..	Jr. 2 yrs.	16638	3·1·25	273	15	4,620	5·01	231·55	200	
				Beauty 6th of Somerville ..	Jr. 3 yrs.	11484	25.2.25	273	24½	7,827	4·57	357·69	250	265
G. Esler, Tongala	2	..	Jersey	Jubilee Lily	Mature	10454	18.2.25	273	9	5,892	5·54	326·42	350	332
				Jubilee Orange Blossom ..	Jr. 3 yrs.	12227	7.3.25	273	8½	3,145	5·32	167·33	250	194
R. Faragher, Koroit	3	1	Jersey ..	Clover of Sananac	Mature	9313	14.2.25	273	16½	5,398	5·85	315·99	350	327, 364, 368
				Clover of Mona Bank ..	Sr. 3 yrs.	11400	27.2.25	273	14½	4,756	5·79	275·34	275	235, 275
				Clover II. of Mona Bank ..	Sr. 2 yrs.	14989	28.2.25	273	10½	3,429	5·58	191·27	225	153
T. R. Findlay, Leitchville	2	2	Jersey ..	Sylvan Grey of Leven Brae ..	Jr. 2 yrs.	14150	28.1.25	273	7½	4,669	4·65	217·29	200	204
				Peeress of Leven Brae ..	Sr. 3 yrs.	11401	29.3.25	273	12½	5,770	4·92	283·73	275	227
W. and G. Finn, Epping	1	..	Jersey ..	Jubilee Cherry Fawn ..	Mature	7339	21.1.25	273	10	4,605	5·41	249·12	350	350, 306, 159, 212, 180, 453

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
Flack and Gamble, Berwick (Published in *Journal* for December as Flack and Sewell)	4	4	Friesian	*Burnbank Bainfield Patch ..	Jr. 3 yrs.	1514	3.10.24	273	37	15,591	3·81	606·75	250	390
				*Leonora Canary Imp ..	Mature	547	17.10.24	273	32½	16,254	4·10	666·37	350	343, 329, 324
				*Burnbank Sylvia Posch ..	Jr. 4 yrs.	1105	27.11.24	273	35	15,432	3·29	508·73	300	257, 349
				Burnbank Inka Sylvia Flower	Jr. 4 yrs.	1107	20.12.24	273	14½	8,518	4·12	350·85	300	247, 344
Flack and Gamble, Berwick (No. 1)	2	2	Friesian	*Springfield No. 4	Mature	1082	16.1.25	273	60	18,231	3·51	640·51	350	293, 256, 409
				Bainfield Topsy 15	Jr. 4 yrs.	1175	18.1.25	273	16½	8,986	4·68	420·84	300	350, 441
Flack and Gamble, Berwick (No. 2)	1	1	Friesian	*Dutch Girl 2nd of Berry ..	Mature	221	4.1.25	273	30	13,140	3·81	500·51	350	208, 327, 371, 391
G. Gange, Werribee	2	..	Ayrshire	May Flower of Roseleigh ..	Jr. 2 yrs.	13479	28.3.25	273	12½	4,228	4·64	196·31	200	
				Annetta of Roseleigh ..	Jr. 2 yrs.	13478	29.3.25	273	10	4,573	4·33	197·79	200	
D. Gazzard, Bostock's Creek	1	..	Jersey ..	Phylis II. of Melksham Park	Mature	9853	24.3.25	273	..	7,058	4·42	312·28	350	
Geelong Harbour Trust, Marshall	5	3	Ayrshire	Mollie Riley of Sparrovale ..	Jr. 4 yrs.	9101	31.12.24	273	8	5,833	4·60	263·16	300	260, 274
				Jewell of Sparrovale ..	Mature	7314	1.1.25	273	21	6,840	4·53	309·79	350	226
				Verbena of Sparrovale ..	Jr. 2 yrs.	13506	8.1.25	273	15½	4,404	4·98	219·35	200	
				Poppy of Sparrovale ..	Jr. 4 yrs.	9106	25.2.25	273	18	8,034	4·17	334·69	300	255, 368
				Shirley of Sparrovale ..	Jr. 2 yrs.	13504	27.2.25	273	16½	5,421	4·21	228·04	200	

* Milked three times daily.

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
Gibson Bros., Trafalgar	3	2	Jersey ..	Wattle Blossom of Leathorn	Jr. 3 yrs.	11430	17.1.25	273	17	4,774	5·92	282·73	250	230
				Easter Daisy of Austral Park	Mature	11031	6.2.25	273	23	7,033	5·95	418·68	350	370
				Wattle Blossom 2nd of Roseneath	Mature	9381	19.3.25	273	13	4,888	5·69	277·91	350	262
Gilbert and Burns, Euroa	1	1	Jersey ..	Glendaphne	Sr. 2 yrs.	12933	28.3.25	..	18	5,556	5·41	300·76	225	
R. Goodman, Kilmany	1	..	Ayrshire	Lily of Roseneath	Jr. 3 yrs.	9135	20.2.25	273	10½	5,455	4·34	236·84	250	278
A. W. Gorman, Alexandra	1	1	Ayrshire	Laurel of Cathcart	Jr. 2 yrs.	12143	5.2.25	273	23	6,249	3·94	246·44	225	
O. G. Handbury, Toora	1	1	Jersey ..	Lassie of Strathbow ..	Jr. 3 yrs.	12205	8.1.25	273	18½	6,262	5·53	346·27	250	237, 408
T. Harvey, Boisdale	1	1	Jersey ..	Daisy VI. of Jerseyholm ..	Mature	5917	14.1.25	273	24½	8,398	5·20	436·47	350	332, 415, 373, 392, 419
W. Henderson (share farm), Grasmere	..	..	Ayrshire	Gertrude of Carracoorte ..	Sr. 3 yrs.	9374	8.1.25	273	17½	5,956	5·06	301·48	275	209
	2	1	Ayrshire	Bud of Carracoorte ..	Mature	3972	27.2.25	..	14	6,507	3·67	238·99	350	219, 239, 257
R. J. Henry, Euroa	3	3	Jersey ..	Heather of Springhurst ..	Sr. 3 yrs.	12218	7.3.25	273	12½	5,799	5·49	318·21	275	242, 338
				Antonette of Hillcrest ..	Mature	9448	23.3.25	273	16½	6,399	5·49	351·62	350	292, 442
				Coleus of Springhurst	Mature	7325	29.3.25	273	18½	6,917	6·10	421·94	350	179, 402, 503, 425

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
R. V. Hogg, Colac West	2	..	Jersey ..	Kenta of Somerville ..	Mature	6946	4.1.25	..	10	3,274	6·01	196·87	350	346
				Ivy of Colac	Sr. 4 yrs.	9304	1.2.25	..	20	5,442	5·66	308·22	325	153
J. Huffer, Traralgon South	1	1	Jersey ..	Pretty Belle of Wattle Bank..	Sr. 3 yrs.	12148	1.10.24	273	20	8,550	4.81	411.12	275	338
J. Hutchinson, Somerville	3	3	Jersey ..	Her Majesty of Somerville ..	Jr. 2 yrs.	14158	10.1.25	..	19½	5,202	4·38	227·86	200	
				Dunalister Perree's Primrose	Mature	10422	2.3.25	..	25	7,890	5·46	430·67	350	423
				Daphne of Somerville ..	Jr. 2 yrs.	Vol. XIII.	27.3.25	273	26½	7,145	4·40	314·03	200	
A. W. Jones and Son, Whittington	2	2	Jersey ..	Lady Grey 17th of St. Albans	Jr. 4 yrs.	11514	4.1.25	273	24	7,347	5·34	392·21	300	298, 305
				Lady Grey 26th of St. Albans	Jr. 3 yrs.	14162	28.3.25	240*	27	7,275	5·27	383·73	250	313
	2	2	Friesian	St. Alban's Daffodil Queen Mercena	Jr. 2 yrs.	2005	13.1.25	273	34½	8,958	3·49	312·88	200	
				St. Alban's Queen Lady Mary	Jr. 2 yrs.	1678	14.1.25	273	18	6,836	3·30	225·33	200	
G. A. Kent, Archie's Vreek	3	2	Ayrshire	Marcia of Woolamai Park ..	Mature	5271	31.12.24	273	14½	7,758	3·59	278·21	350	242, 242, 242, 273
				Marian of Woolamai Park ..	Jr. 2 yrs.	11154	19.1.25	273	14	4,917	4·20	206·48	200	
				Blossom of Woolamai Park ..	Jr. 2 yrs.	11153	8.2.25	273	23	6,404	4·41	282·19	200	
Mrs. E. M. Lennie, Tongala	2	2	Jersey ..	Tea Rose of Tarnpirr ..	Mature	10312	29.12.24	273	7½	6,344	6·29	398·97	350	388, 312, 352
				Linda 3rd of the Valley ..	Jr. 2 yrs.	16667	18.1.25	273	16½	5,391	4·83	260·34	200	
Agricultural High School, Leongatha	1	1	Jersey ..	Sunset Star of Dunalister ..	Mature	5927	13.1.25	273	13	7,620	5·11	389·71	350	350, 380, 495, 469, 442, 372, 406

* Herd withdrawn from test.

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
C. D. Lloyd, Narrewarren	2	1	Jersey ..	Cream Princess of Glen Iris ..	Jr. 2 yrs.	12962	6.1.25	273	13	4,629	5·46	252·74	200	
				Sweet Ginger of Glen Iris ..	Sr. 3 yrs.	12970	10.3.25	273	17	4,035	6·10	246·17	275	215
H. N. Littledike, Werribee	2	2	Jersey ..	Beryl of Paradise ..	Jr. 2 yrs.	16762	1.3.25	273	25	6,183	5·15	318·62	200	
				Lotus Flower of Glenwood ..	Jr. 2 yrs.	Vol. XIII.	16.3.25	273	12½	4,505	6·55	294·97	209	
J. G. Lobb, Tooradin	2	1	Ayrshire	Bona Vista Jessie	Sr. 2 yrs.	12425	15.3.25	273	19	6,006	3·66	219·95	225	
				Bona Vista Marcia	Jr. 2 yrs.	12428	20 1·25	273	26	6,959	4·35	302·91	200	
Longerenong Agricultural College, Longerenong	1	..	Ayrshire	Wistaria of Longerenong ..	Jr. 3 yrs.	12439	12.3.25	273	4	5,461	4·31	235·36	250	233
H. Luxton, Whittlesea	2	1	Jersey ..	Syringa of Springhurst ..	Mature	9665	17.1.25	273	16	5,673	5·76	326·53	350	221, 281, 270
				Valda's Rose of Aveley ..	Jr. 2 yrs.	16958	17.3.25	273	11½	3,967	5·57	220·88	200	
Gordon Lyon, Heidelberg	3	3	Jersey ..	Mabel's Petal 3rd of Banyule	Jr. 2 yrs.	14187	2.2.25	273	18½	5,290	5·81	307·25	200	
				Mabel's Petal of Banyule ..	Mature	7122	23.2.25	273	9	6,894	5·08	350·24	350	315, 347, 415
				Silvermine 29th of Banyule ..	Jr. 2 yrs.	14195	20.3.25	273	20	6,501	5·08	330·01	200	
M. Lyons, Bamawm	1	1	Jersey ..	Lassie Fowler 12th of Melrose	Jr. 2 yrs.	16697	25.1.25	..	16	4,723	5·93	280·25	200	
C. W. Macauley, Rochester	1	1	Jersey ..	Rosebud of Taranah ..	Sr. 3 yrs.	11630	26.1.25	..	14	6,251	6·15	384·36	275	234, 281
T. J. McGallard, Alberton West	1	..	Friesian	Yarra Brae Inka Noir ..	Jr. 3 yrs.	1718	13.2.25	..	10	4,793	3·25	155·86	250	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
K. McGarvie, Pomborneit	1	2	Jersey ..	Fuchsia 6th of Melksham Park	Jr. 2 yrs.	14284	26·2·25	..	..	4,313	5·13	221·31	200	
				Lenra of Greenwood ..	Sr. 3 yrs.	12985	27.3.25	..	16	5,182	5·28	273·55	275	242
				Clara Grey of Greenwood ..	Sr. 3 yrs.	12979	29·3·25	..	17	7,060	5·33	376·45	275	275
R. Maher, Wyuna South	2	1	Jersey ..	Jessie XV. of Melrose ..	Mature	5516	20.1.25	..	10	5,373	5·73	308·04	350	270, 326, 351, 361, 356, 340, 405
				Lady Fowler of Rosemont ..	Jr. 2 yrs.	16720	20.1.25	..	13	4,593	5·56	255·53	200	
T. Mesley, Dalyston	1	1	Jersey	Ragtime of Warenda ..	Mature	7196	10·2.25	..	27	8,768	6·47	567·21	350	427, 482, 616, 556
T. M. Noble, Maffra	1	1	Jersey	Canary 5th of Lysterfield ..	Sr. 3 yrs.	12163	27·2.25	..	28	8,572	5·94	508·75	275	322
Mrs. L. Orchard, Grahamvale	1	..	Jersey ..	Pansy of Grahamvale ..	Mature	5330	9.3.25	241	11	4,410	5·06	223·09	350	227, 213, 346, 226, 202, 267, 287
D. Peter, Heidelberg	1	..	Jersey	Dunalister Manakin's Attraction	Jr. 4 yrs.	10381	30.12.24	273	13	5,019	5·34	268·07	300	277
J. Phillips, Murraydale	1	1	Jersey ..	Faith of Peri	Jr. 3 yrs.	13011	19.2.25	..	17	5,865	4·81	282·16	250	266
J. Plattfuss, Tongala	2	2	Friesian	Yorkshire Rosevale Ideal ..	Sr. 2 yrs.	1443	21.1.25	273	30	13,587	3·67	498·34	225	
				Yorkshire Oakwood Topsy ..	Jr. 3 yrs.	1726	28·1·25	..	18	7,671	3·85	295·03	250	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
J. D. Read, Springhurst	12	10	Jersey ..	Boltonia 2nd of Springhurst	Jr. 2 yrs.	16331	29.12.24	273	13½	4,258	4·70	199·94	200	
				Clover 2nd of Springhurst ..	Sr. 2 yrs.	15600	17·1·25	273	23	6,247	6·27	391·42	225	
				Clover 3rd of Springhurst ..	Jr. 2 yrs.	14242	28.2.25	273	13½	4,014	6·12	245·55	200	
				Chillie of Springhurst ..	Jr. 2 yrs.	14241	3.3.25	273	24	6,552	4·72	309·11	200	
				Laburnum of Springhurst ..	Sr. 2 yrs.	14249	8.3.25	273	21½	5,974	5·42	324·07	225	
				Shaster Daisy of Springhurst	Sr. 2 yrs.	14256	11·3·25	273	18½	4,899	5·84	287·20	225	
				Tulip 2nd of Springhurst ..	Sr. 4 yrs.	9667	14·3·25	273	16	7,935	5·52	437·74	325	517, 278, 316
				Nightshade 2nd of Springhurst	Sr. 2 yrs.	14255	18.3.25	273	16	4,998	6·66	332·70	225	
				Ranunculus of Springhurst	Jr. 2 yrs.	16335	18.3.25	273	13½	3,969	5·70	226·35	200	
				Boree 2nd of Springhurst ..	Jr. 2 yrs.	14238	20·3.25	273	20½	6,031	5·77	347·90	200	
				Veronica of Springhurst ..	Sr. 2 yrs.	14620	20.3.25	273	17	4,474	4·73	211·62	225	
				Bauhemia II. of Springhurst..	Jr. 2 yrs.	12209	23.3.25	273	17½	4,669	5·29	247·19	200	
W. S. Richardson, Riddell	3	1	Jersey ..	Dahlia 2nd of Springhurst ..	Sr. 2 yrs.	14243	19.1.25	273	8½	3,176	6·02	191·19	225	
				Lady Jacqueline	Mature	5359	9.2.25	273	20½	5,798	5·05	292·85	350	217, 290
				Virginia 2nd of Springhurst ..	Sr. 2 yrs.	14261	23.3.25	273	12½	3,877	6·13	237·58	225	
Miss S. L. Robinson, Kew	1	1	Jersey ..	Kyora 's Velveteen 2nd ..	Jr. 3 yrs.	13778	22.2.25	273	17½	5,240	4·90	256·84	250	239
W. P. Rogen, Tatura	1	1	Jersey ..	Jubilee Musk	Sr. 4 yrs.	10455	11.1.25	273	18½	7,386	4·52	334·16	325	136, 247
G. Rowe, Kardella	3	2	Jersey ..	Sweet Pansy 5th of Melrose	Mature	7400	4.1.25	273	13½	5,779	6·41	370·58	350	246, 311, 362, 319, 316
				Duchess of Welbourne ..	Jr. 3 yrs.	13779	5.1.25	273	14	5,127	5·28	270·84	250	244
				Rosette of Hillcrest ..	Mature	10469	5.1.25	273	16	6,480	4·64	300·81	350	246, 212, 252
S. Russell, Tongala	3	2	Friesian	Mossvale Springfield Posch ..	Jr. 2 yrs.	1620	8.1.25	273	25	7,361	3·92	288·89	200	
				Burnbank Bonnie 2nd Mercedes	Sr. 2 yrs.	1515	8.2.25	..	28	7,715	3·39	262·21	225	
				Mossvale Jean	Mature	..	18.3.25	273	8½	7,638	3·58	273·32	350	250
W. A. Sandles, Best, via Toora	1	1	Jersey ..	Lady Betsy of Ferndale ..	Mature	9696	9.2.25	273	23	7,066	5·19	366·36	350	352

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
A. H. Schier, Kernot	8	2	Ayrshire	Gold Point 2nd of Banvule ..	Mature	10288	8.1.25	273	7½	8,206	4·71	386·67	350	224, 273, 371
				Scotswood Duchess ..	Jr. 3 yrs.	10295	8.1.25	273	21	5,107	4·71	240·50	250	216
				Scotswood Model	Jr. 2 yrs.	14155	19·2.25	273	11½	7,197	3·82	274·74	200	
				Scotswood Sylvia	Jr. 4 yrs.	10321	16·2·25	273	17½	6,504	4·49	292·26	300	213, 194
				Scotswood Mayflower ..	Jr. 4 yrs.	10305	23.2.25	273	9½	5,646	3·53	199·44	300	182, 195
				Fine Quality of Gleneira ..	Mature	7711	26.2.25	273	13	6,388	4·60	294·00	350	187, 209, 262, 264
				Merline of Inverleigh ..	Mature	11363	3.3.25	273	12½	5,874	4·77	280·44	350	196, 218, 283
				Bettsie of Inverleigh ..	Mature	10285	7.3.25	273	14½	6,640	4·37	289·97	350	213, 242, 191
A. Schliphalius, Kilmany South	1	1	Jersey ..	Princess Ida of Cloverfield ..	Jr. 3 yrs	11709	12.3.25	273	19½	5,911	5·99	354·13	250	259
Simpson and Charlton, Lower Ferntree Gully	9	8	Jersey ..	Merry Lady of Hillcrest ..	Mature	7042	6.1.25	273	16½	8,403	4·13	347·20	350	
				Madge of Hillcrest	Mature	7039	9.1.25	273	18	6,775	5·66	383·34	350	
				Daisy 8th of Melrose ..	Mature	10362	2.2.25	273	12½	6,163	5·77	355·62	350	422
				Harmony of Hillcrest ..	Sr. 3 yrs.	13715	2.2.25	273	24½	6,850	5·19	355·32	275	
				Briar Rose of Clarendon Eyre	Mature	9571	15.2.25	273	23	7,837	4·55	356·36	350	307
				Silver Bell of Kameruka ..	Mature	6038	22.2.25	273	27½	7,377	6·10	450·11	350	284, 383, 395, 449
				Laura of Devon Park ..	Jr. 2 yrs.	12808	25.2.25	273	17½	4,849	6·07	294·41	200	
				Rose Petal of Tarnpirr ..	Mature	9254	4.3.25	273	20½	6,015	6·23	374·62	350	
				Peerless of Devon Park ..	Jr. 2 yrs.	12899	5.3.25	273	12	3,769	6·42	241·94	200	
O. J. Syme, Macedon	1	1	Friesian	Bolobek Damsel	Sr. 3 yrs.	1125	12.1.25	273	12½	7,669	3·80	291·22	275	399
L. W. Thompson, Pakenham	1	..	Jersey ..	Meadow Sweet of Warenda ..	Mature	9567	12.2.25	273	14	5,351	6·07	325·07	350	404, 439, 481
F. Trevaskis, Tongala	2	2	Jersey ..	Joybell 2nd of Ballara ..	Jr. 2 yrs.	13414	9.1.25	273	7½	3,519	6·49	228·31	200	208
				Pansy of Ballara	Jr. 2 yrs.	15344	12.2.25	273	10	3,676	5·69	209·17	200	

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
J. F. Tuckey .. Alberton	1	..	Ayrshire	Titchie of Tregorland ..	Jr. 3 yrs.	10558	4.3.25	229	5½	3,392	5·16	175·19	250	205
J. T. Tweddle, Berwick	6	4	Friesian	Burnbank Dutch Princess ..	Jr. 3 yrs.	1518	8.1.25	..	16½	6,290	4·51	283·51	250	243
				Burnbank Queen Patch ..	Jr 4 yrs.	738	12.2.25	..	26	9,262	3·65	338·20	300	259, 345
				Rosey 32nd	Mature	425	19.2.25	257	4½	8,868	3·55	314·83	350	406
				Domino Fobes of Yarra Brae	Mature	266	14.3.25	273	13	10,156	3·38	343·76	350	281, 312, 349, 447
C. Wade, Camperdown	2	2	Jersey ..	Fairy Queen of Rockbank ..	Jr. 2 yrs.	16759	8.3.25	273	17½	4,806	5·04	242·09	200	
				Fairy Girl of Rockbank ..	Jr. 2 yrs.	16758	16.3.25	273	18½	6,058	5·37	325·19	200	
Agricultural High School, Warragul	1	1	Red Poll	Nyanza	Mature	373B	3.1.25	273	15½	8,710	4·11	358·06	350	256, 260, 282
F. E. Wilcox, Lilydale	1	1	Jersey	Werribee Wyandotte Cream ..	Jr. 4 yrs.	12244	13.1.25	273	29½	9,792	5·72	559·16	300	334, 475
J. Wills, Bacchus Marsh	2	2	Friesian	Rosie 55th of Lilydale ..	Mature	1140	12.2.25	273	..	12,084	3·73	450·14	350	235, 345
				Lerderberg Rosemary ..	Sr. 2 yrs.	1322	27.3.25	273	..	7,998	3·78	302·32	225	
J. V. M. Wood, Heidelberg	2	1	Jersey	Pollyanna of Aberdour ..	Sr. 2 yrs.	Vol. XIII.	20.3.25	273	19	6,109	5·38	328·87	225	
				Laura X. of Melrose ..	Mature	9893	27.3.25	273	14½	4,668	6·15	287·28	350	283, 391, 331
W. Woodmason, Oakleigh	2	1	Jersey ..	Graceful Duchess 19th of Melrose	Mature	7540	22.1.25	273	16½	5,736	6·27	359·67	350	325, 404, 438, 433, 466
				Lassie Fowler 13th of Melrose	Jr. 2 yrs.	16787	4.3.25	273	12½	3,985	5·48	218·45	200	

PLUM AND PRUNE CULTURE.

By J. M. Ward, Superintendent of Horticulture.

(Continued from page 85.)

Planting.

Reference has already been made to the matter of making a selection of young trees with a good rooting system. By planting a really good, healthy, young tree, the foundation of a plum or prune orchard is well laid. On the other hand, to plant weakly trees invites worry, trouble, and, eventually, disaster.

Fig. 37.—Angelina Burdett grown under Irrigation at Shepparton.

Owing to lack of cross-pollination, this tree did not average half a bushel of fruit per annum.

One-year-old trees are recommended in preference to older ones. Although two-year-old trees usually give satisfaction, those beyond this age are not recommended. There are, of course, exceptions to every rule, but trees older than one or two years are often those of stunted growth in the nursery, which have been kept there until large enough to sell. Such trees as these, if planted out in a commercial orchard, almost invariably prove to be failures when looked at from the point of view of production and profit. It should always be remembered that once an orchard is planted it is expected to produce profitable crops for at least 25 to 30 years. This does not result when low-grade trees are planted.

The distance the young trees should be planted from one another varies in accordance with the desire of the grower; however, an average of 20 feet apart each way is a distance that suits almost every orchardist, and will allow 108 trees to the acre.

Planting can be done at any time during the dormant season, say from June to end of August. It is hardly necessary to say that the soil should first be well cultivated, that is, a good tilth should prevail, at least in the vicinity of each tree, otherwise the tree will probably suffer through lack of moisture during a dry spring in non-irrigated districts.

Pollination.

The subject of pollination is a most important one, probably more important than the average fruit-grower may realize. There is

Fig. 38.—A Block of Angelina Burdett Plums at Shepparton.

Well developed trees, but owing to lack of interpollination, they bear little or no fruit. The defect can be overcome by grafting some Black Diamonds among them.

abundant evidence in practically every fruit district in Australia where certain fruit trees year after year do not produce crops, that the failure is due to lack of pollination with other varieties; but, unfortunately, very little scientific investigation has been made into this phase of plum-growing. In many such instances, growers have worked other kinds amongst their trees with most satisfactory results. The easiest and most practical way of providing cross-pollination in the orchard is to inter-plant several varieties in the one orchard. This can be done by planting out four rows of one variety, followed up by four of another, and so on. If a larger number of a certain kind of plum or prune is required, the orchard could be planned so as to have,

say, four rows of the desired variety, then two or one of another, and so on until the planting of the orchard is completed. In making a selection of plums for cross-pollination purposes in a commercial orchard, care should be taken to plant in rotation those varieties that blossom at the same period and will cross one with the other. The Japanese types (*Prunus triflora*) do not pollinate with the European type of plum (*P. domestica*). When planted on the block system—i.e., blocks of one variety—Angelina Burdett (see Figs. 37 and 38), and Coe's Golden Drop are notoriously poor croppers. The former should be mixed with Black Diamond, or a similar plum blossoming at the same period, and the latter with Green Gages, President, &c. A list of plums, and their full blossoming dates, was printed in this *Journal* for February, page 85. This may be useful to those who desire to make a selection of trees that blossom at the same period.

Fig. 39.—Irrigating Prunes in the Goulburn Valley.

Professor A. H. Hendrickson, Pomologist of the University of California, has made some close investigations into plum pollination; and in his report under date of July, 1919, he arrived at the following conclusions:—

1. The following varieties of Japanese plums were found to be self-sterile at the University Farm, at Davis, California:—Combination, Kelsey, Satsuma, Burbank, Wickson, Sultan, and Abundance.

2. Climax, another Japanese variety, is apparently self-fertile.

3. In general, the early blooming Japanese varieties, such as Combination, Kelsey, and Satsuma, are scanty pollen producers and not effective pollenizers; while the later blossoming varieties, such as Burbank, Wickson, Climax, Sultan, and Abundance, produce pollen abundantly, and are effective pollenizers.

4. Clyman, Tragedy, and probably Grand Duke, are self-sterile, while Yellow Egg and Pond, from one year's data, appear self-fertile. Pond, or Hungarian Prune, as it is known in California, has long been popularly regarded as self-sterile, so too much weight should not be given to the results obtained in one year.

5. All of the five European varieties tested seemed to be abundant pollen producers, and to cross-pollinate one another effectively.

6. The French and Sugar prunes are self-fertile, and, therefore, need not be interplanted with other varieties to secure satisfactory yields. It is probable, however, that their yield may be increased, especially in certain years, if interplanting is practised.

7. Imperial and Robe de Sergeant prunes must be considered self-sterile for practical purposes.

8. Sugar, Imperial, and French prunes cross-pollinate one another effectively. Robe de Sergeant was found to cross-pollinate readily with Sugar and French, but was not tested with Imperial.

9. No evidence of inter-sterility among plums or prunes was found.

10. A comparison over a number of years between trees where there was an abundance of bees flying and trees where bees were scarce, emphasized the desirability of having bees in the orchard. Even self-fertile varieties were immensely benefited by the presence of bees as an agency for distributing the pollen.

11. Climatic factors are probably important in the setting of plums and prunes, as evidenced by the fluctuating set obtained with certain crosses in succeeding years. Investigations, however, have not progressed far enough as yet to throw any light upon this phase of the problem.

12. The following is a list of self-fertile and self-sterile plums and prunes, as found by the Division of Pomology of the University of California:—

Self-sterile.	*Self-fertile.*	*Doubtful.*
Combination.	Climax.	Pond.
Kelsey.	French.	
Satsuma.	Sugar.	
Burbank.		
Wickson.		
Sultan.		
Abundance.		
Clyman.		
Tragedy.		
Yellow Egg.		
Grand Duke.		
Imperial.		
Robe de Sergeant.		

In a further report in December, 1922, upon the same subject, Hendrickson summarizes as follows:—

1. In addition to varieties previously reported, the following Japanese plums were found to be self-sterile:—Apex, Duarte, El Dorado, Formosa, Gaviota, Prize, and Upright.

2. In three years' experiments, Formosa and Gaviota were shown to be inter-sterile.

3. Beauty, Methley, and Santa Rosa seemed to be self-fertile, at least to a limited degree.

4. Apex, El Dorado, Formosa, Gaviota, and Kelsey were generally found to be scanty pollen producers, and therefore of questionable value as pollinators of other Japanese varieties.

5. Beauty, Burbank, Duarte, Santa Rosa, and Wickson seemed to be the most effective pollinators for the Japanese varieties.

6. Among the European varieties, Imperial and Tragedy were again shown to be self-sterile. Likewise, President, Quackenboss, Standard, and Washington proved unable to set fruit with their own pollen.

Fig. 40.—Sugar Prune, 6 years old, growing at Mildura.
Cross-pollinated with Robe de Sergeant and carrying a heavy crop of fruit.

7. Diamond set well with its own pollen one year, but failed to do so the other two. For practical purposes, it must be considered self-sterile.

8. Pond (Hungarian or Gros prune) when pollinated with its own pollen did not set any fruit in 1920, but set a light crop in 1922. It is probably partially self-fertile.

9. California Blue, Giant, and Yellow Egg were shown to be self-fertile. Grand Duke, contrary to results obtained at Davis, where it was found to be self-sterile under certain conditions, was shown to be able to set a small percentage of fruit with its own pollen.

10. All European plums blossoming in midseason or later appeared to be able to cross-pollinate effectively.

4. Clyman, Tragedy, and probably Grand Duke, are self-sterile, while Yellow Egg and Pond, from one year's data, appear self-fertile. Pond, or Hungarian Prune, as it is known in California, has long been popularly regarded as self-sterile, so too much weight should not be given to the results obtained in one year.

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10. A comparison over a number of years between trees where there was an abundance of bees flying and trees where bees were scarce, emphasized the desirability of having bees in the orchard. Even self-fertile varieties were immensely benefited by the presence of bees as an agency for distributing the pollen.

11. Climatic factors are probably important in the setting of plums and prunes, as evidenced by the fluctuating set obtained with certain crosses in succeeding years. Investigations, however, have not progressed far enough as yet to throw any light upon this phase of the problem.

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Wickson.		
Sultan.		
Abundance.		
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Tragedy.		
Yellow Egg.		
Grand Duke.		
Imperial.		
Robe de Sergeant.		

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9. California Blue, Giant, and Yellow Egg were shown to be self-fertile. Grand Duke, contrary to results obtained at Davis, where it was found to be self-sterile under certain conditions, was shown to be able to set a small percentage of fruit with its own pollen.

10. All European plums blossoming in midseason or later appeared to be able to cross-pollinate effectively.

11. Tragedy was able to pollinate the Japanese varieties, but was not pollinated by them.

12. The presence of honey bees materially aided in setting heavy crops on the following combinations of varieties:—Formosa and Wickson, Beauty and Santa Rosa, Diamond and Grand Duke. Observations, furthermore, showed that many other combinations were also benefited by these insects.

13. Inter-pollination of Formosa and Gaviota by means of bees proved unsuccessful. The interplanting of these two varieties for cross-pollination purposes cannot be recommended.

Fig. 41.—A Branch from a Sugar Prune grown at Mildura, showing the effects of cross-pollination with Robe de Sergeant.

14. The results showed that, whenever a particular cross had been made for two or three successive years, the percentage of set was usually lowest in 1922, a fact probably due to the prolonged period of cold rainy weather during the blossoming season of that year.

Although the foregoing investigations were conducted in California, the results will serve as a guide to Victorian growers, as conditions in the both States are somewhat similar.

(To be continued.)

Milk should never be regarded as a luxury or an expense. It combines very well with such foods as cereals. The proteins of cereals are somewhat deficient and are not builders. Supplemented, however, by the proteins from milk, the nutritive value is heightened considerably. Bearing in mind the importance of the vitamins and mineral salts, a good milk supply is a necessity. It is an article which should never be neglected in the diet, and should be planned for first of all before consideration is given to such foods as meats.

THE SHEEP BLOW-FLY.

By N. A. Bowman, Sheep and Wool Expert.

The combating of blow-flies in sheep has received much attention in New South Wales, where there is a Special Experiment Station for the purpose of studying the flies and their habits, and valuable data has been obtained. Although New South Wales is more subject to this pest than Victoria, it is gradually working further south, and in some of our northern areas is actually becoming very prevalent.

The control of blow-flies is not an easy matter. For the most part, the maggots live in decaying animal matter, and in the ordinary course of nature act as scavengers and help to destroy offensive materials in a rapid and efficient manner. A few years since, however, some of the flies began to infest the wool of sheep, and it is fairly easy to understand how this has come about. The thick wool of the animal becomes soiled through various causes, more especially at the hindquarters with urine, and attracts flies; while cuts received at shearing time, or from barbed wire, dog bites, &c., are often a further attraction.

Methods for Controlling the Pest.

1. Treatment of sheep so that flies will not blow them.

2. Treatment after they have been blown.

3. The eradication of the flies, or, at any rate, the lessening of their numbers, by—

(*a*) depriving them of natural breeding places;
(*b*) means of traps.

(1) Every sheep should be thoroughly crutched, and then sprayed. The Experimental Farm in New South Wales has obtained good results with carbolic acid as a basis, and with simple arsenic solution.

(2) With regard to outward dressings for fly-struck sheep, a general impression is that the preparation must be strong enough to kill the maggots almost instantaneously, and be foul-smelling in order to ward off future attacks of the fly. These impressions are quite wrong. A dressing strong enough to kill the maggots on contact will, in doing so, cause great suffering to the sheep, and possibly its death. The dressings used should be mild, and of a penetrating, cleansing, and healing nature. Before dressing, the fly-struck part should be clipped well all around, and all maggots brushed off. The following dressings have been found to give good results:—

(*a*) Lysol, kerol, cyllin, used with water about the rate of 1 oz. to the pint.

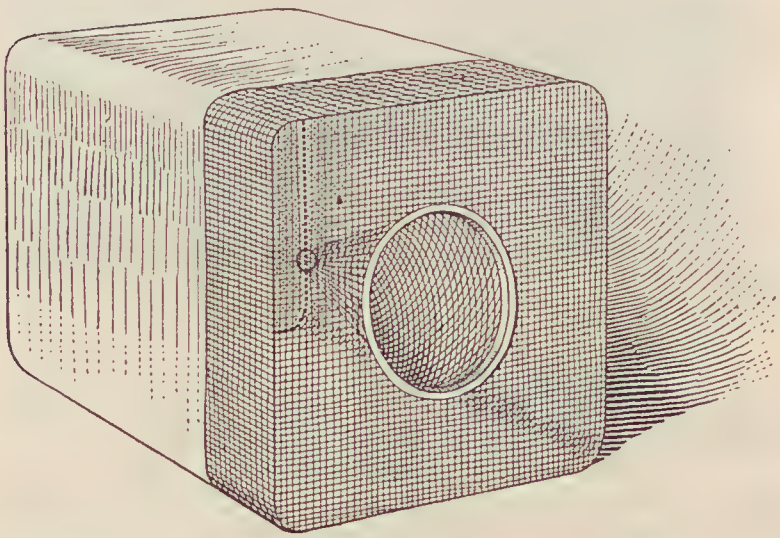
(*b*) C.T.O. mixture, which consists of—

Creosote	.. 4 pints.
Turpentine ..	.. 6 pints.
Olive oil ..	.. 10 pints.

(3) Control measures:—

(*a*) All dead animals, &c., should be carefully destroyed. Large numbers of flies can be killed by throwing over the carcasses a poison—say arsenate of soda solution of a strength of 1½ oz. to 1 gallon of water.

(*b*) Suitable traps form a very efficient method of destroying the fly. The trapping of blow-flies is certainly one of the best methods of control, and the introduction of the trap will have to be considered by every sheep-owner in Australia. If traps are placed about the homestead, killing yards, woolshed, drafting yards, favorite camping grounds and drinking places, they will soon gather up the blow-flies, and the difference will be noticed, not only by those in charge of the sheep, but also by the housekeeper and the cook.



A Blow-fly Trap.

How to Make the Trap.

Any handy man can make a trap out of a petrol tin and some wire gauze. Remove the end of the tin, cover the opening with wire gauge, which should overlap the sides about 2 inches. Let into the wire-gauze covering a funnel 4 inches across and 4 inches in depth, with an opening at the apex about the size of a threepenny piece. Paint the inside of the tin white; if the outside also be painted, the trap will last longer. This type of trap has been tested by the New South Wales Department of Agriculture, and has been used with pronounced success by many pastoralists.

How to Use the Trap.

When the trap has been made, stand it upright and pour in about two quarts of water. Then drop in 1 lb. of meat, or half a freshly-skinned rabbit. Place the wire gauze over the rim of the tin, and firmly press down so that the funnel or cone will point downwards. In summer, fresh water should be poured through the top of the trap every week, and every second week about ½ lb. of meat should be added to the fermenting mass.

Before removing the gauze top, the flies clinging to the under surface should be destroyed with a flare or a torch.

The efficacy of these traps is shown by the fact that, at Warrah, New South Wales, several were set out on 1st October, 1919; they were visited at regular intervals, and the bait renewed, but were not cleaned out until the new year. At a conservative estimate, each trap accounted for a "catch" of 100,000 flies for the three months. It may be reckoned that half of these were females. When it is remembered that each female blow-fly is capable of laying 100 eggs, there seems little room for argument as to the value of a trap as a means of control.

EUROPEAN FRUIT SCALE OR PEAR-TREE OYSTER SCALE.

(*Aspidiotus ostreaeformis*, Curtis.)

FIRST RECORD FOR VICTORIA.

By C. French, jun., Government Entomologist.

Recently specimens of a scale insect detected on apple trees in the Ballarat District by Mr. A. A. Hammond, of the Horticultural Divison, were submitted to me. On comparing them with typical specimens of *Aspidiotus ostreæformis*, kindly forwarded to me from America, I found that there was no doubt whatever that the scale from the Ballarat District was identical with this species. This is the first record of its having been noticed in Victoria.

Mr. Hammond informs me that the scales were to be seen on several trees. Fortunately, no further outbreaks have been observed, and it is hoped that the scale has disappeared from the State, for it is a destructive species. It has been recorded in Europe and elsewhere infesting peaches, nectarines, plums, apples, pears, cherries, currants, dates, palms, oaks, maples, palms, crataegus, &c.

The male scale is not unlike the San Jose scale, but its covering is often more elongated and in some instances almost black, making it very difficult to detect on the bark of trees. Its colouring, however, varies a great deal, often being light-grey in colour. The old scales of the female become yellow or ochreous yellow with age.

The accompanying illustration is from Volume I. of Newstead's *Monograph of the Coccidoe of the British Isles.*

Explanation of Plate (page 177).

Fig. 1. Puparium of adult female from currant (typical form). Enlarged 25 times.

2. Puparium of immature female from currant (typical form). Enlarged 25 times.

3. Puparia of mature female on peach, partly buried beneath epidermal layer of bark. Enlarged 25 times.

4. Puparium of immature female from peach. Enlarged 25 times.

5. Parasitized female showing hole through which the parasite has escaped. Enlarged 35 times.

6. Puparium of male from heather (*Calluna*, Sp.). Enlarged 25 times.

7. Puparium of male from peach. Enlarged 25 times.

8. Male. Enlarged 50 times.

9. Apical point of male antennæ. Enlarged 600 times.

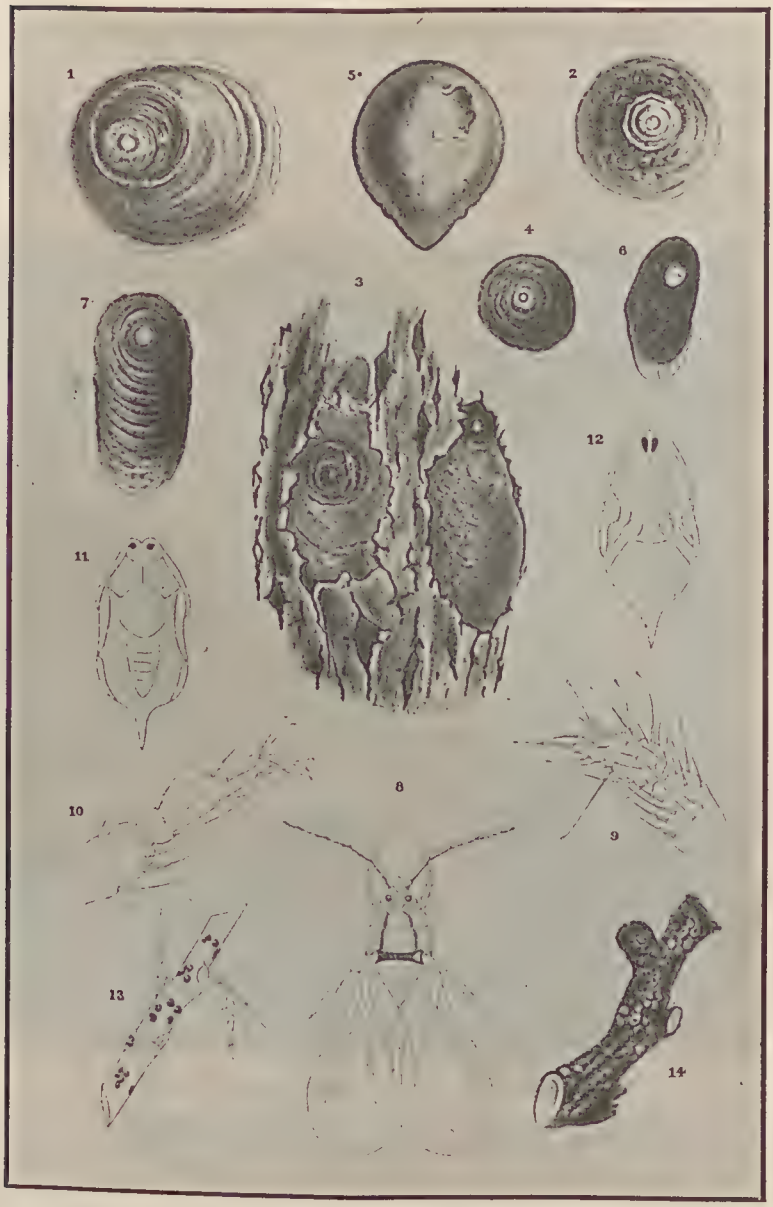
10. Tarsus and claw of the male. Enlarged 600 times.

11. Male pupa (dorsal). Enlarged 50 times.

12. Male pupa (ventral). Enlarged 50 times.

13. Insects, natural size, on branch of currant.

14. Insects, natural size, on branch of plum which is almost covered by them. The white circular patches indicate where the puparia have been removed.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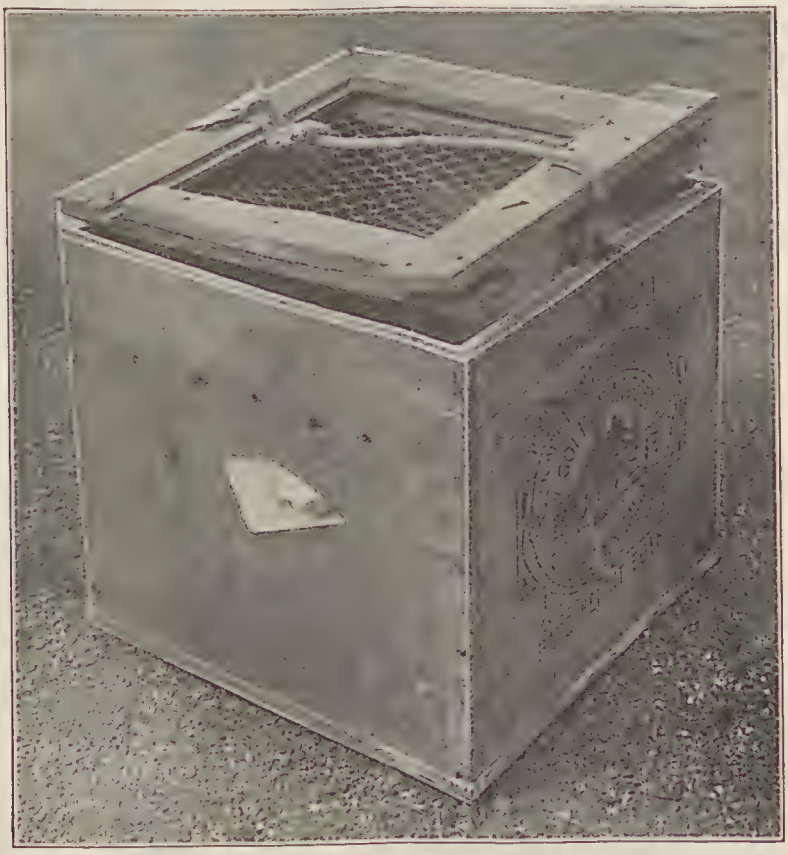
EGG-LAYING COMPETITIONS.

HOW BIRDS SHOULD BE SENT.

By J. T. Macauley, Manager, Burnley Egg-laying Competitions.

At the outset I would like it to be clearly understood that these notes have been written with the sole object of helping competitors in Egg-laying Competitions to get the best possible results—especially have I in mind those sending birds for the first time.



Crate made from a Butter Box 12 in. x 12 in. x 12 in.

The only ventilation is on the top. If another crate were placed on top there would be a danger of suffocating the birds in the lower one.

How often do breeders pay heavy prices for stock, build expensive houses, and go to great pains in selecting and "finishing off" the few chosen for competition, and then forfeit all chance of success by crating the birds in coops utterly unfitted for their needs.

In my opinion, the ideal coop for a pen of six pullets is a wicker hamper 3 ft. 6 in. long, 2 ft. 6 in. wide, and 2 ft. 6 in. high, the top to consist of two doors opening away from the centre. To prevent crowding the coop should be divided by placing a piece of open hessian in the centre; each compartment will comfortably hold three birds. A covering of hessian all round, about two-thirds up the coop from the bottom, will prevent draughts, and allow ample ventilation.

A coop of the make just described will, of course, be fairly expensive, and many would prefer something cheaper. A good coop of the tent-shape order can be easily made from two kerosene cases placed together

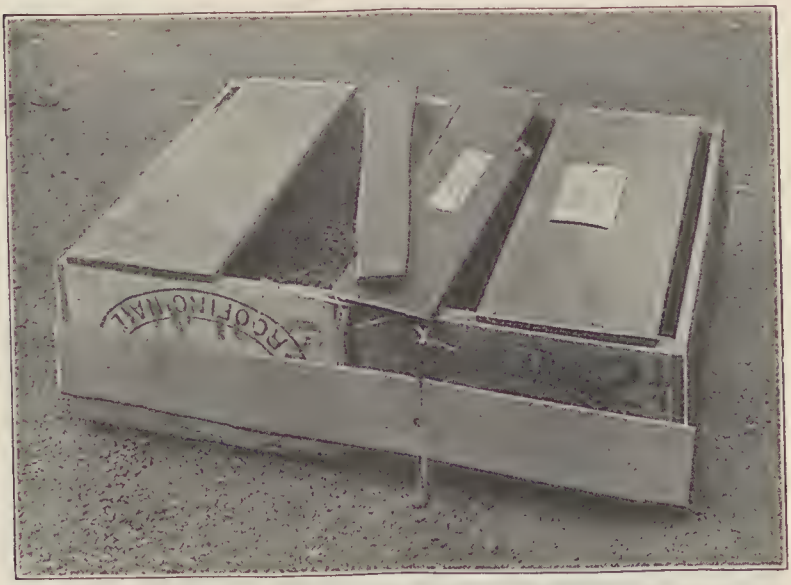
Coop 2 ft. 6 in. x 1 ft. 9 in. x 2 ft. deep.

Note division in centre. Three birds should be put on each side. This crate allows plenty of room and ventilation.

on the flat. Such a coop would be just about of the right size to hold six birds. It, too, could be divided in the centre by open hessian, or wire netting would answer very well. What might be termed the roof section should be covered with a piece of very loosely-woven hessian, or, better still, wire netting. If wire netting be used, however, it should be covered up to about half way with ordinary hessian; this will permit of ample ventilation, and will prevent draughts.

If two pens are being sent, each pen of birds should be crated separately; six birds are ample for one coop.

The essential point is the prevention of crowding and consequent over-heating. I have seen pens of first-class birds arrive at Burnley in crates enclosed with wheat bags. They had become over-heated, and, as a result, suffered from bowel trouble, colds, &c., and thus lost their chance of winning a foremost place in the competition. Over-heating with the reaction that follows is the primary cause of many failures of really good birds.



Coop 2 ft. 6 in. x 1 ft. 10 in. x 8 in. deep.

Eight birds were sent in this coop a long distance by train. It is a most unsuitable coop for use at any time.

Where two birds are being sent, a kerosene case tent-topped coop is as good as any, provided there is ample overhead air circulation. Where one person is sending both a pen of birds and individual birds for competition at Burnley, I would strongly urge that the pen and the birds for the individual section be sent in different coops. This will simplify the liberation of the birds on their arrival and also the crating of the birds at the end of the competitions. And, finally, each competitor is urged to mark his crates clearly and indelibly with his name and pen number. This will help to avoid confusion and enable the birds to be liberated without unnecessary delay.

SUPPLEMENTARY LIST OF ARTIFICIAL FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926.

Description of Fertilizer.	Brand.	Nitrogen.					Phosphoric Acid.				Price asked for the fertilizer per ton.	Where obtainable.
		As Blood.	As Bone and Blood.	As Bone and Flesh.	Total.	Water Soluble.	Citrate Soluble.	Citrate Insoluble.	Total.	Potash.		
		%	%	%	%	%	%	%	%	%	£ s. d.	
Superphosphate ..	Cresco 24 Super.	..	..	..	..	22·00	0·50	1·50	24·00	..	5 5 0	Cresco Fertilizers Ltd., North Geelong
Dried Blood ..	S.C. in diamond, D.B.	10·00	..	..	10·00	..	..	1·50	1·50	..	12 0 0	Sims, Cooper, and Co. (Aust.) Pty. Ltd. of 34 King-street, Melbourne
,, ,, ..	Imperial ..	11·75	..	..	11·75	..	..	0·75	0·75	0·50	12 0 0	W. Angliss and Co. Pty. Ltd., 42 Bourke-street, Melbourne
Blood and Bone ..	Cresco ..	..	5·00	..	5·00	..	3·00	11·50	14·50	..	9 5 0	Cresco Fertilizers Ltd., North Geelong
,, ,, ..	King's, Geelong	..	5·20	..	5·20	..	5·23	11·02	16·25	..	9 0 0	Joseph C. King and Sons Pty. Ltd., Little Fyans-street, South Geelong
,, ,, ..	Imperial ..	..	4·75	..	4·75	..	5·00	12·00	17·00	..	9 0 0	W. Angliss and Co. Pty. Ltd., 42 Bourke-street, Melbourne
,, ,, ..	S.C. in diamond, B.B.	..	5·50	..	5·50	..	6·00	11·00	17·00	..	8 0 0	Sims, Cooper, and Co. (Aust.) Pty. Ltd., 34 King-street, Melbourne
Blood, Bone, and Phosphatic Guano	Cresco ..	..	3·00	..	3·00	..	5·30	11·00	16·30	..	8 5 0	The Cresco Fertilizers Ltd., North Geelong
Bone and Super. ..	,, ..	..	..	2·00	2·00	9·50	3·90	3·00	16·40	..	6 15 0	,, ,, ,,
Bone Fertilizer and Super.	Elsworth's ..	..	..	1·50	1·50	11·00	2·50	5·00	18·50	..	6 12 6	William Elsworth, Victoria-street, Ballarat
Bone, Super., and Gypsein Fertilizer	,, ..	..	..	3·00	3·00	1·50	4·00	9·50	15·00	..	7 5 0	W. R. Elsworth, Victoria-street, Ballarat
Bone Fertilizer ..	,, ..	..	..	3·00	3·00	..	5·50	10·50	16·00	..	7 5 0	,, ,, ,,

Description of Fertilizer.	Brand.	Nitrogen.	Phosphoric Acid.	Mechanical Condition.		Price.	Where Obtainable.
				Fine.	Coarse.		
		%	%	%	%	£ s. d.	
Bonedust	Pioneer's	3·05	23·68	28·00	72·00	9 2 3	William Abraham Rainey, Mepunga East
,, ...	King's, Geelong ..	4·26	20·89	40·60	59·40	9 0 0	Joseph C. King and Sons Pty. Ltd., Little Fyans-street, South Geelong

Melbourne, 28th January, 1926.

P. RANKIN SCOTT, Chemist for Agriculture.

BAGGED WHEAT COMPETITION, SHEPPARTON.

Extract from Report by Judge H. A. Mullett, B.Ag.Sc., Superintendent of Agriculture.

The highest bushel weight was 66.6 lb., and the lowest 59.9 lb. The average for the thirteen lots was 64.8 lb. per bushel; that is to say, the average bushel weight was 4.3 lb. higher than the f.a.q. standard fixed for last harvest.

Few impurities were noticed. A few wild oats were common to most samples; two samples contained a little barley; several drake and ironweed; and two the seed of hoary cress—a noxious weed. Two of the samples were pinched, but most of them were of bright and plump grain. Only in one case could much exception be taken to the amount of rubbish present.

The thirteen samples can be regarded as typical of the wheat produced in the district, and the bushel weight is a fair guide to the comparative excellence of the wheat as compared to the State's average (60½ lb.).

Competitions such as this should serve to emphasize the necessity for all farmers paying more attention to the production of clean, well winnowed grain. Only by this means can the f.a.q. standard for the State be improved. When that is done, better prices will surely follow.

STALLION REGISTER 1925-26.

Under the "Horse Breeding Act 1919."

Registrations prior to 31st August, 1925.

Part III.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
700	Taffy	A	Pony ..	McIntyre, A. W.	Dunkeld
138	,, ...	A	,, ..	Sargent, J. ..	Yanac
392	Take Bells ..	A	Light ..	Ferguson, J. ..	Redesdale
53	Tam O' Shanter Bill	A	Pony ..	Gordon, G. ..	Ellerslie
482	Tatahu	A	Light ..	Stephenson, M. ..	29 King-street, Fitzroy
110	Tax Payer ..	A	Pony ..	King, V. ..	Scott's Creek
341	Tenor Voyage ..	6	Light ..	Siebel, F. ..	Thomastown
790	The Abbot ...	A	,, ..	Hamilton, A. B.	Riccarton, Fish Creek
41	,, Banker ..	6	Draught ..	Templeton, A. ..	Coleraine
202	,, Colonel ..	6	,, ..	McDonald Bros...	Mortlake
131	,, Crown ..	A	,, ..	Altmann, E. A.	Pullut
63	,, Design ..	A	Light ...	Carter, W. J. ..	438 Barkly-street, St. Kilda
369	,, Duke ...	3	Draught ..	Romeo, F. ..	Deering P.O., via Tempy
907	,, Dux ..	4	,, ..	Mitchell & O'Brien	c/o Campbell and Sons, Melbourne
78	,, Factor ..	A	,, ..	Bates, C. ..	Dobie

Part I. published in *Journal* for November 1925 and Part II in *Journal* for February 1926.

Stallion Register, 1925-26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
137	The Fashion ..	A	Draught ..	Dyson, R. ..	Dromana
788	„ General ..	A	Light ..	Shelley, D. ..	Bungaree
538	„ Globe ..	5	„ ..	Barker, J. ..	Coburg
948	„ Grocer ..	4	„ ..	Lesser, C. A. ..	Coleraine
616	„ Honourable Ben ..	A	Thoro'bred	McDonald, A. ..	Meeniyan
295	„ Joker ..	A	Pony ..	Chambers, D. ..	Mologa
751	„ Premier ..	A	Draught ..	Taylor, G. ..	Leichardt
844	„ Roster ..	6	Light ..	Lesser, C. A. ..	Coleraine
1	„ Scot ..	A	Pony ..	Armstrong, J. B.	Hamilton
178	„ Scrip ..	A	Thoro'bred	Robertson, C. ..	Maroona
203	„ Starling ..	A	Light ..	Farrell, S. ..	Stratford
79	„ Voyager ..	A	„ ..	Robinson, J. T.	Tongala
152	This Time ..	A	Pony ..	Hance, Mrs. A. ..	Lang Lang
356	Thornfield Craig ..	2	Draught ..	Leeder, E. J. ..	Cope Cope
865	Tigo	6	Pony ..	Murray, L. M. ..	Lake Bolac
833	Tim Brigham ..	A	„ ..	Nicoll, J. C.	Euroa
339	Timely Direct ..	6	Light ..	Cromie, J. M. ..	Swan Hill
911	Tinytown ..	A	Pony ..	Deane, J. ..	Sturt-street, South Melbourne
297	Toby	A	„ ..	Thompson, A. W.	Hamilton
926	Tom Mix ..	4	Light ..	Wall, M. ..	Pyramid Hill
662	„ Thumb ..	A	Pony ..	McGrath, T.	Irrewillipe E.
617	Tommy ..	A	„	Boyd Bros. ..	Minhamite
618	„ Dodd ..	6	„ ..	„ ..	„
330	Tony Bells ..	A	Light ..	Orton, L. W. ..	Cobden
656	Toy Bells ..	A	„ ..	Lindner, C. ..	Murtoa P.O.
390	„ Land ..	A	Pony ..	Burke, J. ..	Muskerry E.
826	Toyrene ..	A	Thoro'bred	Blyth, C. ..	26 Finsbury-street, Newmarket
738	Tra George ..	A	„ ..	Wall, B. ..	Cardinia Creek, via Clyde
843	Tracey Voyage	A	Light ..	Mackin Bros.	Korong Vale
207	Tramore ..	A	Thoro'bred	McDonald Bros.	Mortlake
1002	Treasure ..	3	Draught ..	Thompson, W. H.	Yalco P.O.
499	Trelawney Time ..	A	„ ..	Larcombe, R. H.	Mt. Moriac
352	Trelawney's Pride	4	„ ..	Nairn, J. ..	Ouyen
969	Tremenheere Craig	4	„ ..	Davies, C. N. ..	Rochester W.
619	Tresco ..	A	Light ..	Bowman, A. E.	Ebden
1004	Tressayr ..	6	Thoro'bred	Widdicombe, M. W. G.	Horsham
661	Trotting Railway II.	A	Pony ..	Exors. late Capt. Staughton	Eynesbury Estate, Melton South
389	True Steel ..	A	„ ..	Young, A. ..	Rathscar, via Maryborough
298	Trump	A	„ ..	Thompson, A. W.	Hamilton
724	Trustworthy	3	„ ..	Ramsay, S. ..	Swan Hill
396	Truro	A	Light ..	Light, J. E. ..	Quantong
752	Tuxedo Voyage ..	6	Pony ..	Towt, M. E. ..	Garfield
483	Udale	A	Draught ..	Holdsworth, J. ..	Jung Jung
704	„ Jack ..	6	„ ..	Middleton, P. O.	Carron
245	Unit	A	Pony ..	Rogers, B. ..	Mepunga E.
636	Vanguard ..	A	Draught ..	Lord, G. and W.	Flynn
316	Venalto ..	4	Light ..	Smales, R. A. ..	Irymple, Mildura
854	Venerror ..	A	„ ..	Wallis, J. C. (senr.)	Miram
804	Vic McKinney ..	3	„ ..	Morris, C. ..	Upper Ferntree Gully
653	Vice Regal ..	5	Draught ..	Parish, W. G. ..	c/o Wilson and Bolton, Horsham

STALLION REGISTER, 1925-26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs			
663	Vice Royal ..	6	Draught ..	Walker, Mrs. I. B.	Swan Hill
531	Viceroy Yet ..	4	,, ..	Liesfield, C. ..	Rainbow
635	Viking	A	Light ..	Turnbull, A. G.	Winton, Horsham
825	,, of Methven	A	Pony ..	McLellan, Mrs. ..	Dandenong - road Windsor
278	Vin Direct ..	A	Light ..	Mulfahey, J. D.	96 Lewisham-road, Windsor
870	Von Osterley ..	A	,, ..	Forrest, R. ..	Cowes, Phillip Is.
299	Waironga Prince	A	Draught ..	Fielding, G. W.	Watchem
368	Waironga's Model	4	,, ..	Yetman, J. ..	Turriff
908	Wakanni Chimes	3	,, ..	Mitchell & O'Brien	c/o Campbell and Sons, Melbourne
143	Wakapero ..	6	,, ..	Jenner, G. E. ..	Kerang E.
681	Wakepan ..	A	Light ..	Wood, J. ..	Reid's Creek, via Beechworth
320	Wallace Dale ..	3	Draught ..	Butler, G. J. ..	Carisbrook
427	,, Park ..	4	Thoro'bred	Walsh, F. H. ..	Melton South
984	War Lord ..	3	Draught ..	Bransgrove, J. ..	Wood-street, Preston
664	Warrigal ..	A	Pony ..	Baulch, S. S. ..	Orford
498	Wee Jim ..	A	,, ..	Kettyle, J. R. ..	Castlemaine
212	,, Key ..	6	,, ..	Kirkwood, R. ..	Byaduk Nth., via Hamilton
279	Welsh Flyer ..	A	Light ..	Reid, P. J. ..	Milawa
90	,, ,, ..	A	Pony ..	Irving, F. ..	Tyrrell Downs
990	Weralla ..	5	Thoro'bred	McLeod, E. ..	Yarram
620	Westmont ..	A	Light ..	Hay, Wm. ..	Bullock Swamp
397	Weybridge ..	A	Thoro'bred	Robins, F. E. ..	Maffra
421	What's Wanted ..	2	Draught ..	Trollop, M. B. ..	Cope Cope
674	Whip Voyage ..	6	Light ..	Peters, Jno. ..	Cobden
213	White Star ..	A	,, ..	Kelly, G. ..	c/o Mailman, Rochester
923	Widgiewa Alick ..	2	Draught ..	Jackson Bros. ..	Piree P.O., via Waaia
981	,, Belmont	5	,, ..	Perkins, C. H. ..	Rainbow
660	,, Cavalier	A	,, ..	Gordon, A. ..	Broughton, via Nhill
7	,, Chief ..	6	,, ..	Lynn, S. J. ..	Orbost
882	,, Dale ..	3	,, ..	Grigg, F. W. ..	Rutherglen
40	,, Edward	6	,, ..	Down, W. G. ..	Koonda P.O., via Violet Town
742	,, Fashion	6	,, ..	Oliver, W. L. ..	Diggora West
957	,, Fingal	3	,, ..	Mills, J. ..	Warracknabeal P.O.
680	,, Ivo ..	A	,, ..	Wilkinson, W. G.	Yarrawonga
813	,, Leo ..	2	,, ..	Gray, J. S. ..	Sheep Hills
961	,, Lebbus	2	,, ..	Colvin, A. ..	Nathalia
673	,, Marshall	6	,, ..	Christie, Jno. ..	Katunga
910	,, Ninian	4	,, ..	Mawson, W. ..	Cohuna
142	,, Sapper..	A	,, ..	Schultz, F. J. J.	Cowangie
812	,, Stephen	4	,, ..	Hewitt & Sons, C.	Werrigar, E.
765	Wigtonshire ..	A	,, ..	Cobain, J. ..	Sale
937	Willah	5	Thoro'bred	Cocks, J. ..	Bundri L.B., via Tongala
388	William of Orange	A	,,	Gray, A. J. ..	3 Fletcher-street, Essendon
435	,, Sportsman	5	Draught ..	Dehnert, W. A.	Ballan
307	,, Wallace	4	,, ..	Bish, E. ..	Chirrup
97	Willie Craig ..	A	,, ..	Oxley, G. (junr.)	Gre Gre North

STALLION REGISTER, 1925–26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
852	Windlesham ..	A	Thoro'bred	Hillman, W. T. ..	Queen-st., Bendigo
909	Winning Hit ..	4	Draught ..	Hargreaves, J. ..	Eskdale
863	Winteriga ..	A	Thoro'bred	Coe, W. ..	Coleraine
77	Woodlands ..	A	Pony ..	Funcke, W. ..	Laen, via Minyip
475	Worthy Mac ..	6	Draught ..	Elliott, J. ..	Kyabram
497	Wotan	A	Thoro'bred	Dickinson Bros.	Sebastopol
39	W. W. Estell ..	A	Light ..	Hannah, J. ..	Donald
848	Yarrawaak ..	A	,, ..	Macdonald, F. D.	Terang
496	Yeneda ..	A	Thoro'bred	Hutchinson, D. A.	Yan Yean
315	Young Badaween	A	Pony ..	Baensch, A. ..	St. Arnaud
439	,, Baron Bold	4	Draught ..	Sandwith, S. ..	Wallace View, Ballarat
216	,, Brigham	A	Pony ..	Craig, W. J. ..	Cobden
80	,, Clarionet	A	Light ..	Mitchell, Jno. ..	Karnak
204	,, Clydeside	A	Draught ..	Jager, H. ..	Swan Hill
280	,, Comet ..	A	Pony ..	Adkin, T ..	Korumburra
112	,, Coronation	A	Draught ..	Bennett, W. J ..	Cannie Railway Station
215	,, Cymra Bach	A	Pony ..	Brownlow, C. ..	Berriwillock
205	,, Dan ..	A	Draught ..	Haggbloom, J. V.	Sea Lake
734	,, Dunsdy Victor ..	3	,, ..	Walker, E. A. ..	Cowangie
672	,, Estell ..	A	Pony ..	Smith, C. E. (junr.)	Mildura
484	,, Flashlight	A	Draught ..	Rawson, T. ..	Bingo, Omeo P.O
324	,, Ginger ..	A	Pony ..	Bell, W. M. ..	Camperdown
862	,, Hero ..	A	Draught ..	Branson, Jas. ..	Lake Cooper
485	,, Linkwood	A	,, ..	Peverill, J. H. ..	Charlton
789	,, Lord Lyon	A	,, ..	Chamberlain and Ritchie	Morwell
141	,, Pepper ..	A	Pony ..	Exors. N. Thornley	Hawkesdale
671	,, Rysharold	A	,, ..	Brown, W. ..	16 Nicholson-street, Fitzroy
963	,, Siam ..	4	Light ..	Fehring, H. ..	Cohuna
277	,, Starling ..	A	,, ..	Regan, W. ..	6 Montgomerie-st., Mooneo Ponds
96	,, Yelretso ..	A	,, ..	Ford, M. ..	Maryborough
771	,, Lymney Champion	6	Draught ..	Penaluna, W. H.	Boolarra
300	,, Repeater	A	,, ..	Johns, W. E. ..	Murrayville
970	,, Scotchman	3	,, ..	Buckle, G. ..	Rochester
206	,, Shepherd	A	,, ..	Chapman, G. ..	Minyip
520	,, Simon ..	5	,, ..	Sheehan, W. ..	Muckleford

THE POTATO AND ITS ORIGIN.

It is generally accepted without question that the potato was first introduced into Europe by Sir Walter Raleigh. There is a pretty story, too, how his gardener—to whom the tubers were given for experiment—disgusted by the sour fruit which in due time appeared, gladly obeyed his master's order to dig the plants up, only to discover, with surprise, that where he had planted one tuber there were now several. It is recorded, too, that early in the last century, when Sir Walter Scott was presented with the freedom of Cork, he declared that "The discovery of that root (the potato) is alone sufficient to immortalize the hero who lost his head so unjustly on Tower Hill." These and other legends are now shattered by a series of articles by W. E. Safford in the American *Journal of Heredity*, entitled "The Potato of Romance and Reality." It now appears that "there is not a particle of evidence that Sir Walter ever saw a potato in America." In Germany, it is Sir Francis Drake who figures as the legendary discoverer of the potato. In Offenburg (Baden) there is even an imposing statue in his honour, on which the great navigator appears holding in his hand a potato plant with the tubers attached. The Drake legend, however, has no better foundation than that which associates Raleigh with what is sometimes popularly styled "the comestible tuber."

The true story of the potato as established by recent American research is, shortly, as follows:—The potato, as we know it, was in cultivation in South America centuries before the Christian Era. Persistent search has failed to find *Solanum tuberosum* growing as a wild plant. Vases discovered in prehistoric graves in Columbia have the exact shape of the cultivated plant, and even in some cases dried specimens of the root have been found in these tombs. When the Spaniards first invaded South America they found the potato extensively cultivated in the higher parts of the country now known as Columbia. As early as 1538, an early Spanish writer speaks of the potato found growing near Quito as "a kind of ground-nut, which when boiled becomes as soft as a cooked chestnut." It was known in the native languages as "papas," a word from which our English word "potato" is probably derived. The Spaniards appear to have taken some of the tubers to Europe soon after their conquest of Peru, for we know that the potato was in cultivation in Italy as early as the year 1585. For a century afterwards it appears to have been grown in gardens both in England and the Continent, but merely as an interesting exotic plant.

Now comes an interesting fact. The value of the potato as a food staple was first recognized in Ireland, where soon after its introduction in the seventeenth century it became the main food crop of the poorer classes. In 1664 in England the first pamphlet advocating the cultivation of the potato appeared under the curious title, "England's Happiness Increased, or a Sure and Easy Remedy Against all succeeding Dear Years by a Plantation of the Roots called Potatoes, etc., etc.,

Invented and Published by John Forster, Gent., of Harslop in Buckinghamshire." Apparently the first county in England to adopt the cultivation of the potato extensively was Lancashire, but as late as 1770 it was not grown as a farm crop in the south-west of England.

The cultivation of the potato in Germany dates from 1774, when Frederick the Great set himself the task of imposing its use on his people. It was some years later that the cultivation was introduced into France under Louis XVI, largely as a consequence of the publicity given to its merits by one Parmentier, an obscure pharmacist, who had learned to appreciate the potato when a prisoner-of-war in Germany.

Such, in brief, are some of the facts picturesquely narrated in the articles quoted.

[*Journal of the Ministry of Agriculture—England.*]

THE VALUE OF AFFORESTATION.

Although there are some who think that isolated clumps of trees can "attract" rain, there is no foundation to such belief, and it is generally accepted by experts that forests, excepting those located in particularly favorable situations, do not increase the rainfall in their vicinity.

A programme of extensive afforestation is, nevertheless, necessary. It will lead to decreased soil-erosion and a more economic use of the rainfall, the preservation and improvement of mountain catchment areas, and the regulation of the flow of rivers and the clarification of the waters thereof.

Rain falling on forests is retarded in its fall to the earth by the leafy canopy, and reaches the earth with a decreased velocity and a reduced destructive force. The trees themselves, and the sponge-like litter of leaves in all stages of decay lying beneath them, act as obstacles to the rainwater running off. The time of contact between the water and the soil is thereby greatly lengthened, and opportunity for soaking into the soil is increased. Useless evaporation is reduced. The underground water, provided the trees do not transpire excessive quantities of water, is strengthened, and the perennial flow of springs assured. The surface water, running off more slowly, causes less soil erosion, and the binding effect of the roots of the trees renders the soil more resistant to the action of running water.

ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.L.S., Pomologist.

The Orchard.

Green Manures.

If a cover crop of leguminous plants is required for green manuring a start at planting may now be made. This can be done only when all the fruit has been gathered from the trees. An early crop is a distinct advantage. The cover crop should make a good growth before the winter sets in, as the plants make very little headway in the cold weather, and they require to be ploughed in as soon as the ground is dry enough in early spring. It will thus be seen that it is necessary to get a good autumn growth, as dense as possible, and one which will adequately cover the surface before winter.

Cultivation.

Should the weather remain hot and dry it will be very necessary to give the land surface a good stirring, so as to conserve water supplies. Where fruit crops have been gathered a start may be made late in the month with the autumn ploughing; whatever ploughing is done should be left as rough as possible.

Pests.

No codlin moth-affected or diseased fruit of any kind should be left on the ground after the crop has been gathered. These should all be destroyed by boiling.

All rust-affected foliage and fruit of plum and peach trees, as well as all other stone fruits that have been attacked by this and other fungus diseases, such as shot-hole, &c., should be burned if possible. This will minimize the possibility of future attacks.

The Vegetable Garden.

Autumn weeds must be kept out of the kitchen garden. These rapidly grow, and remain as robbers right through until the spring time.

The section should be well dug over for planting winter crops. Before digging a light sprinkling of bonedust and a good top dressing of stable manure should be spread on the surface. These may then be dug in, as they provide humus for the soil. Large plots should be avoided in winter; where such occur a path should be run down the centre. This will provide more efficient drainage. The beds, too, may be more raised than in the summer time.

Early onions may be planted out in the beds, and, if not already done, onion seed should be planted at once.

All classes of seedlings may be planted out, and seeds of lettuce, early peas, beet, carrots, radish, cabbage, cauliflower, and swede turnip may be sown.

Asparagus beds should be cleaned up and cut down as soon as the berries begin to colour. Celery rows should be kept earthed up; rhubarb beds should be given a dressing of manure to encourage the coming winter crop, and new rhubarb plantations may now be established.

The Flower Garden.

All classes of spring-flowering bulbs may now be planted. In bulb planting the bulbs should not come in contact with any manure. The manure should, some time previously, have been dug well in, and mixed with the soil, and all heat should have disappeared. If manure is required, it should be placed below the bulb, so that the roots may ultimately penetrate to it. Bulbs thrive in sandy soils, and where the soil is heavy a little sand may be added to advantage. Bulbs should not be planted too deeply; the depth to plant is generally regulated by the size of the bulb. Such bulbs as freesias may be covered with only an inch of soil, while larger bulbs may be somewhat deeper.

The increasing prevalence of both bulb mite and rhizoctinia fungus in attacking bulbs makes it a matter of urgency that all bulb gardens and plots should be well dressed with lime before the bulbs are planted. The lime should be dug into the soil; and after the bulbs have been planted, a top-dressing should also be given. Each dressing need not exceed 2 ozs. per square yard. Clifts's manurial insecticide is also good.

Dahlias and chrysanthemums may be fed with liquid manure, or mulched with stable or poultry manure. In any case the feeding should not be too strong nor too frequent, and it should always be withheld before the flowers come.

All hardy annual, biennial, and perennial seeds may now be planted. Among these are dianthus, candytuft, sweet peas, Iceland poppies, anemone, ranunculus, stock, wallflower, columbine, foxglove, phlox, penstemon, pansy, gaillardia, &c.

Wherever aphis and red spider occur the plants should be sprayed with benzole emulsion, nicotine, pestend, or soaperine, or some other preventive in order to protect the coming flowers. Mildew attacks on the rose should be warded off by the use of sulphur. The sulphur may be either dusted on the plant or it may be scattered on the ground around and under the plant.

March is one of the best months for transplanting evergreen plants of all classes, trees, shrubs, and palms. The roots of the transplanted plants should be disturbed as little as possible, while the roots of those transplanted from pots should be well uncoiled and set out before planting.

The soil is now warm, and the roots will quickly take hold and grow They are thus established for the winter, and will give little or no trouble in the subsequent summer heat and dryness.

In preparing the soil for planting the trees care should be taken not to dig small holes. A small hole is simply a "pot hole," in which the winter water accumulates, and as a result the young tree roots are rotted.

A large hole should be dug; or better still, the whole planting area should be well cultivated all over, and the plants or trees then set out in this cultivated area.

REMINDERS FOR APRIL.

LIVE STOCK.

Horses.—Those stabled should be fed liberally. Food of a more stimulating nature can now be given to get them well over the "changing coat" season. Those doing fast or heavy work should be clipped; if not wholly, then trace high. The legs should not be clipped. Those not rugged on coming into the stable at night sweating freely should be wiped down and in half-an-hour's time rugged or covered with bags until the coat is dry. Yearling colts if vigorous and well grown may be castrated. Weaned foals should have a little crushed oats daily, if available. Horses to be turned out during winter should not be clipped. Their mouths and feet should be examined and attended to where necessary.

Cattle.—As the nights become colder the dairy cows should be rugged. The rugs should be removed in day-time when the shade temperature reaches 60 degrees. If new grass is plentiful, give a ration of hay or straw, whole or chaffed, to counteract the purging effects of young grass. It will be found profitable to give a few pounds of bran, crushed oats or pollymeal in addition to other food to all cows giving a fair quantity of milk. Algerian oats should be sown on suitable land for grazing off in the winter. Sow a mixture of oats, rye, and tares or peas for winter fodder or to fill silos. Irrigated lucerne may be scarified in autumn, Algerian oats sown, and in this way good feed provided for cows in winter. Only exceptional cows or those required for city milk supply should be served between now and July. Within the next two or three months is the best time for cows to calve, as they will pay to feed through the winter, give the best returns for the season, and be dry when the feed is dry and at its worst. Take care that salt lick previously recommended is available. One or two pounds of linseed cake or meal given daily should be found beneficial. In addition to its feed value, the oil in the cake or meal will counteract the effect of dry feed, which is liable to cause impaction. Calves should have lucerne hay or crushed oats when grass is not plentiful.

Pigs.—Sows not already served should be put to the boar. Supply all pigs with plenty of bedding, and see that sties are warm and well ventilated. Supply sows liberally with grain. Castrate young boars as early as possible. Pigs should be highly profitable now, as pork is very dear. Rape, barley (especially skinless, oats, &c., may be sown for grazing during winter. There is a great shortage of high-class bacon suitable for Wiltshire sides. This must be rectified by breeding on better lines and feeding properly. It is proved that first cross pigs, the progeny of two pure breeds, produce better bacon and more cheaply than subsequent crosses, so it should be the aim of all to work into pure sows as rapidly as possible, and by using the Large York boar on pure-bred sows, Middle York or Berkshire for preference, the class of pigs will more nearly approach the requirements of the curers.

Sheep.—Merino and fine cross-bred ewes, if mated early (November-December), will lamb from now on. Particularly will this apply to early shorn ewes joined in the north of the State, as they have a natural tendency to take the rams early. These fine-wooled ewes, if in lamb to a Lincoln, Romney Marsh, Shropshire, Dorset Horn, English and Border Leicester, or Suffolk may have trouble at lambing. Close attention should be given morning and evening during the lambing period, with a view to avoiding losses in both ewes and lambs. Heavy-wooled ewes cast easily, and need constant attention. Crutching is usually undertaken this month, and a safe rule to follow is to have all ewes that are to lamb crutched one month before lambing. Lambing is usual (considering the varied conditions of the different districts of this State) from March to September, but flock owners should arrange their lamb-dropping date to suit their particular country. True, they have no control over the season, but they would be wise to strike an average, considering the question of feed and water. If ewes are atten-

tive mothers any deaths of lambs after the flock owner has given all the reasonable practical attention possible are better dead, as they would be probably poor culls if saved by more expensive treatment and cost. Foxes, eagle hawks, and stray dogs are often the cause of losses at lambings and should be guarded against where possible. Give purgative drenches at first sight if ewes appear ill in any way. Ewes after difficult parturition or retention of after-birth can often be saved by flushing out with ½ oz. of lysol to 3 parts of warm water. Fresh pasture, sown grasses, or green crops should be reserved for ewes with their lambs a few days after lambing. Marking of the lambs can be undertaken one week after birth, but it is usual to wait for about two to three weeks after the first lambs are dropped before having a general marking. A second marking at about six weeks usually completes the operations in this direction for the flock. In districts where conditions make a second dipping necessary, see that it is done before the weather becomes too unsettled, and certainly in the case of lambing ewes, well before or after lambing. Rams should be drawn from ewes mated in December and early February, usually six to eight weeks after joining.

POULTRY.—Soft food aids moult; add a teaspoonful of linseed to each bird's ration once daily. The more exercise the hens get the better they moult. The mash is mixed with one packet of Epsom salts to twenty birds once a week. Keep a sharp look out for chicken pox. Forward pullets should now be in their winter quarters, with plenty of scratching litter, and fed liberally—including ration of animal food, dried milk, or separated milk. Grit, shell, and charcoal should always be available. Feed some succulent green food after the grain food at night.

CULTIVATION.

FARM.—Dig potatoes as they mature. Cart out and spread stable manure. Finish preparation of land for main cereal crops. Sow Chou Moellier seed in beds for transplanting. Sow a mixture per acre for green feed during the winter months for the dairy herd, such as:—1½ bushels, Oats; ½ bushel, Cape Barley; ½ bushel, Tick Beans; ½ bushel, Pease. Sow Giant Drumhead Cabbage for transplanting (1 lb. sufficient for 1 acre, in rows 3 feet apart); provided the soil is in good friable condition, plants from seed sown last month should be planted out. Early sowings of wheat and oats begin; also rape for winter feed or green manuring. Prepare clean seed-bed for lucerne; and sow Hunter River, Arabian, or Peruvian seed, free from dodder, in drills 7 inches apart and at the rate of 12 lb. of seed per acre. Sow permanent pastures with grasses and clovers.

ORCHARD.—Prepare land for planting; plough deeply and sub-soil. Plant legumes for green manure. Plant out strawberries. Clean up Codlin Moth from trees as soon as all fruit is gathered.

FLOWER GARDEN.—Plant out evergreen shrubs, trees, and Australian plants, divisions of herbaceous plants, seedlings, layers, and rooted cuttings. Feed chrysanthemums with liquid manure weekly until flowers begin to open. Prepare land for future plantings of roses and shrubs. Keep dahlias tied to stakes.

VEGETABLE GARDEN.—Plant out seedlings from the seed beds. Dig all vacant spaces roughly. Sow onions for early crop; also peas and broad beans. Clean out asparagus beds wherever the seeds are ripening.

VINEYARD.—Examine "Yema" grafts to see if strings require cutting. Consideration must be given to manuring; early application is strongly urged. Peas, &c., for green manuring should be sown as soon as possible.

CELLARS.—Cleanliness is emphatically urged. Carefully remove all fermentable refuse—skins, lees, skimmings, &c. Such odds and ends favour multiplication of Vinegar Flies (*Drosophila albo fasciata*, &c.) If present, destroy these with formalin or insecticide powders. A little bisulphite or sulphurous acid in washing water is recommended; also free use of lime on floors, &c.

ASPARAGUS CULTURE.

Asparagus is a good paying proposition in South Africa, but it is only in comparatively few places that it can be grown with success. The best soil is a good sandy loam. The main secret of success is to have well prepared trenches before planting. Make the beds from 3 to 4 feet wide with paths about 2 feet wide, this mainly to prevent walking on the beds and damaging the crowns. Dig the soil 2 feet deep, in the bottom spit turn as much well rotted stable manure as possible. Do the same to the top spit.

The plants should be raised from seed. Get a good variety, and sow it fairly thickly in a tin. To get a quick germination, seed can be soaked for 24 hours. Asparagus seed is fairly slow in germinating, taking 20 to 24 days. Seed can be sown at different times. It can be sown as soon as it is taken from the plant, and the young plants can be ready for transplanting in autumn, or the seed can be sown in spring, either in tins or in the prepared beds.

When the young plants are about 3 or 4 inches high they can be transplanted into their permanent quarters. Plant the young plants to a foot apart each way. Very little attention is required except weeding for a couple of years. A light dusting of salt is considered helpful in winter time. Spread the salt on the surface and rake it in. When harvesting the third year, cut about one-third of the crop, the fourth year one-half, and the fifth year and onwards you can cut two-thirds.

It must be understood that when cutting the young shoots sufficient of them should be left evenly distributed over the bed to carry on the work of food elaboration or to assist in the storing up of the food material for next year's growth. After the plants are well established the cost of looking after asparagus is very small, and as a rule asparagus is sold at about 1s. per small bundle. It can thus be seen that this is a paying crop.

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G.G. Sire's D. Dam's	,,	12565	,,	... 10	,, ,,	8853	,,
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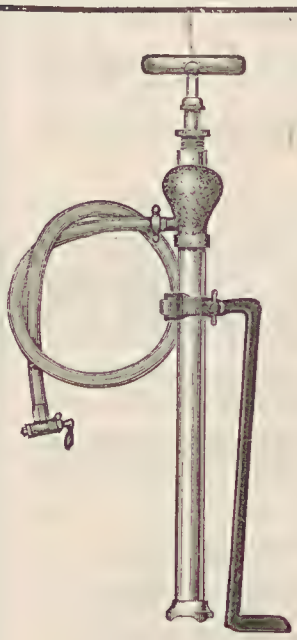

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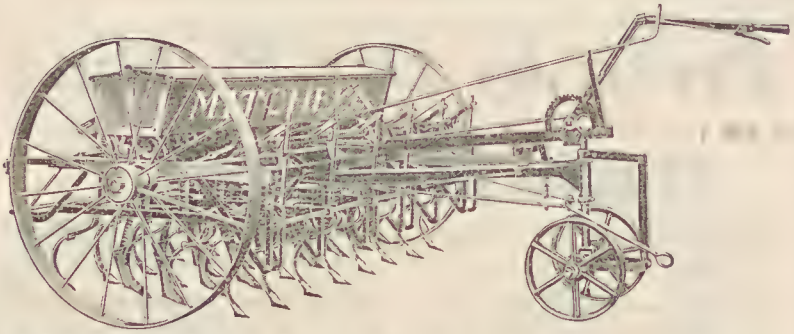

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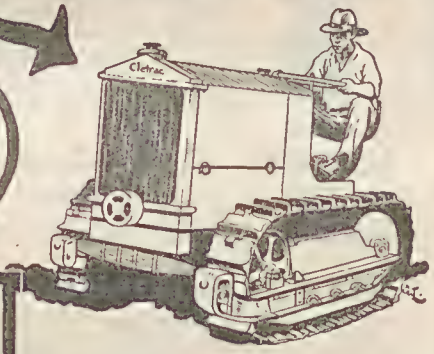

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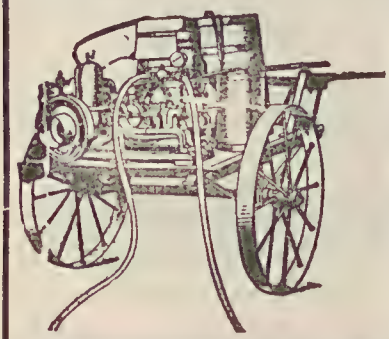

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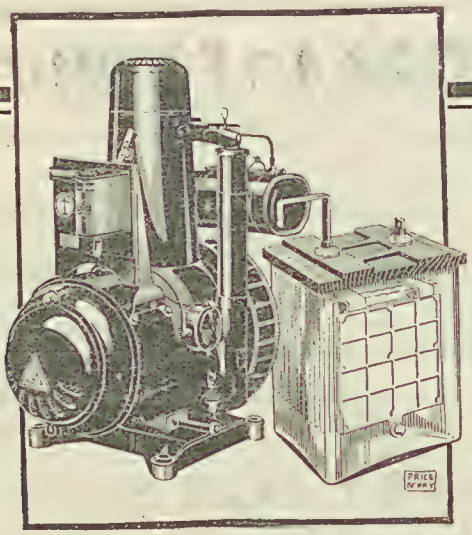

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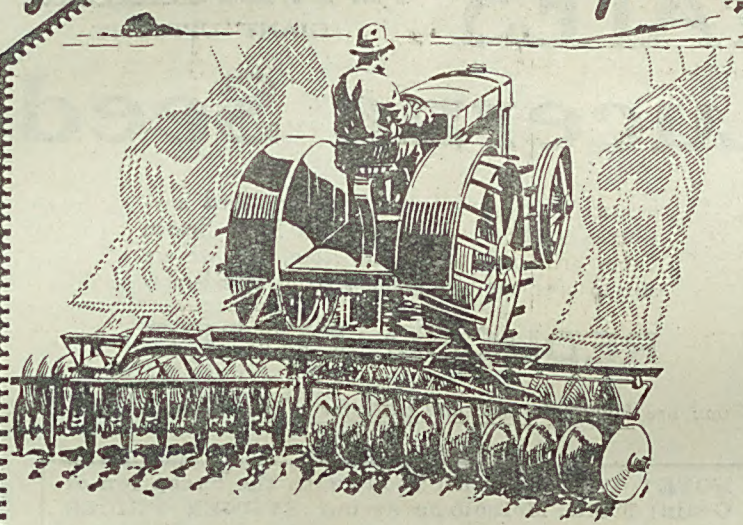

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